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# Legislating Stock Prices*


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ABSTRACT

We demonstrate that legislation has a simple, yet previously undetected impact on stock prices. Exploiting the voting record of legislators whose constituents are the affected industries, we show that the votes of these "interested" legislators capture important information seemingly ignored by the market. A long-short portfolio based on these legislators' views earns abnormal returns of over 90 basis points per month *following* the passage of legislation. Industries that we classify as beneficiaries of legislation experience significantly more positive earnings surprises and positive analyst revisions in the months following passage of the bill, as well as significantly higher future sales and profitability. We show that the more complex the legislation, the more difficulty the market has in assessing the impact of these bills; further, the more concentrated the legislator's interest in the industry, the more informative are her votes for future returns.

JEL Classification: G10, G14, G18.

Key words: Legislator incentives, voting, return predictability, lobbying.

## 1. Introduction

An important but understudied relationship that impacts firms is the one between firms and the government. Governments pass laws that affect firms' competitive environment, products, labor force, and capital, both directly and indirectly. While this relationship is well-understood, it is often difficult to determine which firms any given piece of legislation will affect, and how it will affect them. However, we do observe the behavior of agents with a direct interest in the firms affected by legislation. By observing the actions of legislators whose constituents are the affected firms (its employees, suppliers, other local stakeholders, etc.), we can gather insights into the likely impact of government legislation on firms. In particular, focusing attention on the legislators who have the largest vested interests in firms affected by a given piece of legislation gives a powerful lens into the impact of that legislation on the firms in question; a lens that the market does not appear to be gazing through.

In this paper, we exploit the fact that very rich data exists on the behavior of legislators. Legislator voting behavior is public and detailed going back decades for both chambers of the U.S. Congress (the Senate and House of Representatives). We use these voting records to "sign" the impact of each piece of legislation, as positive or negative, for the given set of firms it affects. Our approach is based on the simple but powerful method of isolating the specific legislators who have a vested interest in each bill. We show that focusing on the economic incentives of these legislators, as expressed through their votes, is far more informative than using other methods, such as textual analysis, in determining the likely impact of government legislation on firms.

The measurement of which firms are materially impacted by a given bill is at the crux of this paper. We isolate legislators who have a vested interest in a given bill by establishing the amount of economic activity in that legislator's state that is likely affected by the bill in question. In particular, we look at the number of firms, number of employees, and aggregate size of firms, for each industry in each state, and assign each legislator's interests based on these measures. We examine industries rather than firms as only very rarely can a legislator put language into a bill that solely affects an individual firm (empirically, we only see this a handful of times in our 20-year sample of all legislation); this could be for cosmetic reasons, or simply because a legislator often has many firms from a given industry in her state, and does not want to appear to favor one, at the perceived detriment of others. This tendency also may be impacted by (or be the driver behind) most powerful lobbying groups forming at the industry level.

We then employ an empirical approach designed to pinpoint the impact of legislation on industries. To do so, we first construct a classification scheme that assigns affected industries to bills based on the text of each bill. Next, we examine how "interested" legislators vote versus "un-interested" legislators on each respective bill. This approach yields a fair amount of power in that each firm (by definition) is headquartered in at least one legislator's constituency, but for each firm and industry that is affected by a given bill there will be a large group of un-interested legislators to compare against. There are enough un-interested legislators that are alike in nearly every other dimension (party-affiliation, ideology, voting on all other bills, etc.) to the interested legislators that we can form very fine control groups to tease out solely the part of legislators' voting behaviors that is driven by their direct interest in a given firm or industry. Specifically, we examine whether interested legislators are more positive or more negative for the bill (relative to the uninterested control group). If the interested legislators vote more in favor of a bill covering their vested industries than uninterested legislators, we code this as a positive bill for the underlying industry. If they vote more negatively for a bill that passes[1] than uninterested legislators, we code this as a negative bill for the industry.

To better understand our approach, consider an example from our sample, bill S.3044 shown in Figure 1. The description of this bill is: "To provide price relief and hold oil companies and other utilities accountable for their actions with regard to high energy prices..." The bill is clearly negative for the oil industry. However, as seen in the upper left-hand corner of the figure, the bill did pass, with a "yes" vs. "no" percentage of 54% positive (51/(51+43)). And yet, examining solely the interested (industry-tied) Senators' votes shows a very different story. These interested Senators, left to their own

[1] We limit to bills that pass as these are the bills that have the potential to actively change the regulatory environment for the treated firms. We understand that bills that fail also likely contain information for firms even if they keep the status-quo regulatory regime (if the market probabilistically weights the likelihood of passage), and we show evidence on these, as well.

vote, would have voted down the bill with 60% voting against (or only 40% voting in favor (6 yes/(6 yes + 9 no)). Further, beneath the vote counts in Figure 1, one case see that each of the Senators from LA and TX (where Oil is the #1 ranked industry) voted "no" on the bill, irrespective of their party affiliations. Using our measurement, we thus denote that this bill as likely negative for the oil and gas industry, since the difference between the yes ratios of the two groups is -0.1425 for this particular bill. We then apply this classification scheme to the complete universe of bills over our entire twenty-year sample period.

If the market does not fully incorporate the information in legislator behavior to infer each bill's full effect on firms, then that leaves rich, important information for firms' underlying values that is unincorporated into market prices. The advantage of our approach is that we can use the actions of legislators to *predictably* identify the subsequent impact of each law on each firm.

We show that a long-short portfolio strategy that buys the affected industries when interested senators are especially positive, and shorts the affected industries when interested senators are especially negative, yields returns of 76 basis points per month. We form these value-weighted industry portfolios at the end of each month *following* bill passage, and rebalance monthly. We show that these returns are virtually unaffected by controls for known risk determinants. For example, the four-factor alpha of this long-short portfolio yields abnormal returns of 92 basis points ($t$=3.01) per month, or over 11 percent per year. Decomposing this long-short portfolio return indicates that 78 basis points comes from the short side ($t$=2.80), while only 14 basis points comes from the long side ($t$=0.77). We also show that there is almost no run-up in terms of firm returns in the 6- (or 12-) month period prior to the bill's passage. Only over the post-passage period does the market sluggishly begin to realize the impact of the bill for firm values. Collectively, these results are consistent with the market having difficulty in deciphering the information contained in bills for future firm value. More strikingly, the market does not seem to be taking into account the information in the vested-interest legislators' voting on these bills following bill passage, even though these votes are completely in the public domain.

One possible concern is that any reasonable manner in which one "signs" these bills may lead to abnormal returns if the market is truly ignoring the potential impact of government legislation. There may be nothing special, then, about isolating those legislators with the largest vested interests, per se. To address this, we explore a few other sensible methods, and examine their ability to pick up this same information for firm values. For example, if one believes that legislators on average bring positive bills to passage to help their constituent industries, then one could ignore the specific composition of legislators' votes and simply long the affected industries when bills pass, and short the affected industries when bills fail. A second, more nuanced method, might use the text of the bill itself along with established dictionaries of positive and negative words, in order to classify each bill as positive or negative for an industry. We construct both of these measures, and find that neither the more naïve strategy nor the textual analysis strategy have any predictive ability for future firm returns.[2] We also explore two market-based approaches, one that exploits the immediate stock return announcement effect at passage in order to sign the bill, and another that uses the prior 6-month market-adjusted return prior to passage in order to sign the bill, and again find that neither approach predicts future returns. Thus, there appears to be something unique about exploiting the incentives and vested interests of legislators that gives an especially informative measure of the impact of bills on future firm values.

We also examine the real effects of legislation on industries. We analyze both shorter-term future information events (such as quarterly analyst revisions in earnings estimates, and earnings surprises), as well as longer-term industry fundamentals (such as annual sales growth and future profitability). We find that the votes of interested Senators also predict future increases in these real industry-level quantities. These results suggest that both the timing and the magnitude of the return predictability we document are reasonable given the subsequent news about industry fundamentals that appears over the next few months following bill passage, and the real effects on industry profitability and sales growth that emerge over the longer term.

Additionally, we conduct a number of tests designed to isolate the mechanism driving our main results. For example, if we truly are identifying important information

[2] It is important to note that we again see no pre-vote run up, nor any announcement effects, using either of these two measures to classify positive legislation and negative legislation for firms.

in interested legislators' behaviors for future firm values, then if we could find even more concentrated interests, these accompanying legislators should have even more informative behavior. We approach this idea in several ways. The first is to measure concentrated interests by looking at legislators whose largest state industry (e.g., oil) makes up a large fraction of their total state's economic activity. We find, consistent with more concentrated interests being even more informative, that the long-short portfolio following these especially concentrated vested legislators yields four-factor abnormal returns of 105 basis points per month ($t$=2.37).

The second way we link these returns more directly to the interests of legislators is by looking at how important the given bill is for each industry mentioned in the bill. Although a number of industries may be mentioned in a given bill, a bill may largely focus on a single industry and only peripherally touch on a number of others. If legislator interest really is the driving force behind our return results, we should see the most informative votes being those most directly impacted by the bill; thus, the industry that dominates the bill's text. When we focus on the voting of solely the interested legislators who are impacted by the most dominant industry in the bill, the long-short portfolio returns rise to 130 basis points per month ($t$=2.78), or 15.6% per year. To focus even further on these most important mentioned industries, we also look solely at those firms in the most important mentioned industry who are headquartered in interested legislators' states. The idea here is that legislators, while not able to mention specific firms, still can have some latitude to focus industry-wide legislation in a way that most benefits the firms in their states (e.g., loosening offshore drilling regulations, while keeping oil fracking regulations constant). While this reduces the sample size quite a bit, the effect on the magnitude is large: the long-short portfolio has returns of 184 basis points per month ($t$=1.89).

To explore the question of what allows the return predictability we document to persist, we also examine the complexity of the bills in question. Specifically, we test the idea that the market may have a harder time deciphering the likely impact of a complicated bill as opposed to a simpler bill, and hence we should observe more return predictability following the passage of complex bills. Using measures of bill-level complexity based both on the word-length of a bill, as well as the number of votes on a given bill, we find evidence consistent with this idea in the legislation data.

We also examine the impact of lobbying on our results. The motivation behind this test is that when we see industry lobbying organizations spending large amounts of money, it presumably is to sway the opinion of legislators. If lobbyists spend even part of this money outside of states that already have a vested interest in the law, then we might expect formerly "uninterested" legislators to be influenced by these lobbyists, and hence become somewhat "interested." Thus lobbying would reduce the distance between our "interested" and "uninterested" legislator measure (as some of the previously uninterested legislators are now interested), and so reduces the power and predictability of our measure. We find evidence for this effect in the data: when industry lobby groups spend large amounts in a given year, the predictability of our measure of interested versus uninterested legislators using the location of economic activity drops by almost half.

In sum, we believe the main contribution of the paper is demonstrating how our new methodological approach helps in identifying the impact of legislation, given the incentives of the economic agents who constructed and voted the legislation into law. In particular, nearly all of the literature on the importance of the political environment for firms has focused on implied connections from characteristics such as political campaign donations, procurement contract allocation, or board seat connections. Our measure is quite complementary to these in that our identification relies on the primary economic incentive of the legislator – namely to be re-elected. In order to be re-elected the legislator needs votes, and in order to curry votes the legislator needs to deliver value to constituents in terms of passing legislation in their best interests. Thus, from this basic economic incentive, we provide new, powerful evidence both on legislation's impact on firms, and how the market understands this value. We also think it is important to highlight how even sophisticated market participants fail to recognize these impacts until reasonably long after the incented agents have released the information in the form of their votes; and although there is considerable evidence on firm-level predictability in returns, there is far less evidence on predictability in industry-level returns, which is one of the surprising aspects of this paper.

The remainder of the paper is organized as follows. Section 2 describes the setting and related literature. Section 3 describes the data. Section 4 presents the main portfolio and regression results. Section 5 explores the real effects of the legislation on impacted firms, while Section 6 explores the mechanism in more detail. Section 7 presents robustness tests along with additional tests of our main results. Section 8 concludes.

## 2. Related Literature

Our paper adds to a vast literature that studies the impact of government policies on firms. While a large literature studies the impact of government actions (e.g., spending policies) on broader state-level outcomes (see, for example Clemens and Miran (2010), Chodorow-Reich, et al. (2010), Wilson (2011), Fishback and Kachanovskaya (2010), Serrato and Wingender (2011) and Shoag (2011)), our approach in this paper is closest to a recent strand of the literature that explores firm-level outcomes. These papers examine the benefits that firms perceive (and receive) from currying favor and/or making connections with politicians, such as higher valuations (Roberts (1990), Fisman (2001), Jayachandran (2006), Faccio (2006), Faccio and Parsley (2006), Fisman et. al (2007), Goldman et. al (2007)), corporate bailouts and government intervention (Faccio et. al (2006), Duchin and Sosyura (2009), Tahoun and Van Lent (2010)), and lucrative procurement contracts (Goldman et. al (2008)).[3] Our focus in this paper is on all Congressional legislation, not simply budget bills or spending polices, and our outcome variable of interest is the stock returns of affected firms. In this sense, our paper is also related to a recent literature examining the impact of government policy on asset prices (Pastor and Veronesi (2012), Belo, Gala, and Li (2012)). Our approach in this paper is unique in that we focus on politician-level voting behavior and bill-level legislation in order to identify the impact of legislation on firms.

Finally, since our empirical strategy relies on the idea that firm-level constituent

[3] See also Cohen, Coval, and Malloy (2011) for evidence on the impact of state-level earmark spending on firm-level outcomes such as investment and employment, and Julio and Yook (2012) who document that corporate investment varies with the timing of national elections around the world.

interests affect Congressional voting, our paper is also related to a large literature studying the factors that influence the behavior of elected officials. Much of this literature (see, for example, Stigler (1971) and Peltzman (1985)) argues that political party and constituent interests are key determinants of politicians' voting behavior. Hibbing and Marsh (1991), Stratmann (2000), Pande (2003), Chattopadhyay and Duflo (2004), and Washington (2007) also provide evidence that personal characteristics such as service length, age, religion, race, gender, and the presence of a daughter in one's family can affect the behavior of elected officials. Finally, a variety of papers stress the importance of political ideology in explaining Congressional voting behavior (see Clinton, Jackman, and Rivers (2004), Kau and Rubin (1979, 1993), Lee, Moretti, and Butler (2004), McCarty, Poole and Rosenthal (1997), McCarty, Poole and Rosenthal (2006), and Poole and Rosenthal (1985), (1997), (2007)). Meanwhile, Levitt (1996), Ansolabehere et. al (2001), Synder and Groseclose (2000), Kalt and Zupan (1990), and Mian et. al (2009) provide a number of different perspectives on separating out the impact of ideology versus party interests, constituent interests, and special interests. Since our interested and uninterested legislator groups change for each bill depending solely on industry, this forms finely specified treatment and control groups that allow us to control for other voting determinants, and identify solely this vested interest impact on each vote.

## 3. Data and Summary Statistics

We combine a variety of novel data sources to create the sample we use in this paper. Our primary source of data is the complete legislative record of all Senators and all Representatives on all bills from the 101st through 110th Congresses. We collect this from the Library of Congress' Thomas database. Each "Congress" is two years long, and is broken into two one-year-long "Sessions." Therefore, 10 Congresses represent twenty years of Congressional data from 1989-2008. We collect the result of each roll call vote for the twenty-year period in each chamber of the Congress, and record the individual votes for every Congressman voting on the bill (or abstaining). We choose to start with the raw bill data, rather than using alternate, publicly available versions of the Congressional roll call data (see, for example, the Voteview website, as well as McCarty, Poole and Rosenthal (1997), McCarty, Poole and Rosenthal (2006), Poole and Rosenthal (1985), (1997), (2007), among many others), or the Political Institutions and Public Choice (PIPC) House Roll Call Database (Aldrich, Brady, de Marchi, McDonald, Nyhan, Rohde, and Tofias (2008)), which classifies bills by issue type (but is harder to map to specific firms/industries), because our approach exploits the specific text of each piece of legislation and allows us to map bills to affected industries.

A key aspect of our empirical strategy is thus that we utilize the content of each specific bill that is voted on. To do so, we download the full text of all bills voted on over our 20-year sample period. We collect the full-text data jointly from the websites of the Government Printing Office (GPO), and from the Thomas database. As in Cohen and Malloy (2013), we then parse and analyze the full bill text to classify each bill into its main purpose. For our tests, we attempt to assign each bill to one (or more) of the 49 industry classifications used in Fama and French (1997); to do this we first construct a set of keywords for each industry, based on the Fama-French 49-industry definitions.[4]

We then create an executable (shown in Figure A1), in which we input all bills and their corresponding full-text and assign bills to industries based on the count of the number of times these keywords appear in a given bill.[5] We only assign a bill to an industry if the number of instances of a particular keyword exceeds a certain threshold of frequency on a given bill relative to its overall frequency in the entire population of bills. We use two potential methods to construct thresholds: the first is the absolute count of the keyword, and the second is the ratio of that word to the entire number of words in the bill. For instance, the word "electricity" has a frequency cut-off of 11 times, representing the 95$^{th}$ percentile of that keyword's distribution amongst bills. We have used cut-offs for both measures ranging from the 75$^{th}$-95$^{th}$ percentile, and the results in the paper are unaffected. All results reported in the paper are for the middle of this range, 85$^{th}$ percentile, using the absolute number of keyword appearances.[6]

Individual bills can be assigned to more than one industry; however, we use a

[4] The "Fama-French 49" industry definitions map specific 4-digit SIC (standard industry classification) codes to 49 different industry categories, and are publicly available online from: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/.

[5] See Hoberg and Phillips (2011) for a similar approach that maps firms to industries based on firms' product descriptions from their annual reports.

[6] See the Appendix for more details on our industry assignment procedure, keywords, cutoffs, etc.

conservative assignment procedure such that our procedure only results in industry assignments of any kind for less than 20% of all bills, and specifically only those bills where we can confidently gauge that an industry is likely to be affected by the bill in question. Figure A1 presents an example of a particular bill that was assigned only to the Fama-French industry #30: Petroleum and Natural Gas, based on the relative frequency of pre-specified keywords in the bill that pertain to this industry. Figure A1 displays the summary text at the top of the bill, which indicates that the bill clearly pertains to the oil and gas industry. We have compared our bill categorizations to those used in other work (see, for example, Aldrich, Brady, de Marchi, McDonald, Nyhan, Rohde, and Tofias (2008), among others), but prefer our approach because it achieves our explicit goal of assigning each bill to the specific industries (and thus *firms*) that are potentially affected, rather than to the specific policy issues under consideration.

Importantly, our empirical approach in this paper also requires us to "sign" the impact of each bill, as positive or negative, for the given industry it affects. We do so by exploiting the voting record of those Senators who are likely to identify it as a relevant industry to their constituents. To identify the constituent interests of a given Senator, we assign each firm domiciled in a Senator's home state to one of the Fama-French 49 industries; "relevant" industries to a particular Senator on a particular bill are those industries that: i.) are assigned to that bill using the procedure described above, *and* ii.) have at least one firm headquartered in the Senator's home state that belongs to the given industry. We then rank all the industries in each Senator's state by aggregating all firms in each industry by size (sales and market cap), and define "important" industries as those that rank in the top three for each state in terms of size. Next we sign each bill by looking at the voting records of those Senators who have "important" industries that are mentioned in the bill; we term these Senators as "interested" Senators, and term all the remaining Senators as "uninterested" Senators. The rationale behind this procedure is that a Senator's vote on a particular bill that affects important firms in his state is likely to suggest how that bill will affect those firms in his state; thus we can infer that a yes vote by a Senator with a vested interest in a bill is likely to mean that the bill is positive for the industry he cares about, and vice versa for a no vote.

Figure 1 displays the executable program we created to implement our signing procedure for the same bill depicted in Figure A1. The summary text indicates that the goal of this bill is "to provide energy price relief and hold oil companies and other entities accountable for their actions with regard to high energy prices," so the bill is likely to be perceived as negative for the oil and gas industry.

Specifically, we “sign” each bill’s expected impact on a given industry by comparing the votes of “interested” Senators on that bill to the votes of “uninterested” Senators on that bill. We then compute an Economic Interest signing measure as follows: we compute the ratio of positive votes of all interested Senators by dividing their total number of yes votes on a bill by their total number of votes, and compare this to the ratio of positive votes of all uninterested Senators. If the ratio of positive votes by interested Senators is greater than that for uninterested Senators, we call this a “positive” bill for the industry in question; by contrast, if the ratio of positive votes for interested Senators is less than that for uninterested Senators, we call this a “negative” bill for the industry. In Figure 1, this measure is denoted “R-R” (in the bottom right corner), and equals -0.1425 for this particular bill, indicating that this is likely a negative bill for the oil and gas industry. Our results are very similar regardless of whether we use this ratio difference measure, or alternative signing measures such as the absolute ratio ("Ratio" in Figure 1, i.e., the percentage of interested Senators who vote for the bill), or the relative ratio ("R/R" in Figure 1, i.e., the percentage of interested Senators who vote for the bill divided by the percentage of all Senators who vote for the bill).

For some of our ancillary tests, we also hand-collect lobbying data from the OpenSecrets.org website (sponsored by the Center for Responsible Politics). Finally, we draw monthly firm-level stock returns, shares outstanding, and volume capitalization from CRSP, and extract firm-specific accounting variables, such sales, research and development (R&D) expenditures, capital expenditures (CAPEX), and book equity, from Compustat.

Table 1 presents summary statistics from our sample. As Table 1 shows, over 82 percent of bills in our sample pass. As a result, for a given bill, an average of 73 votes are “Yes” votes. For our Top 3 classification of “interested” Senators, the average number of Yes votes is around 8. Finally, the mean industry-level value-weighted return over our sample period (1990-2008) is 78 basis points per month.

## 4. Portfolio and Cross-sectional Regression Results

### *4.1 Economic Interest Portfolio Returns*

Our primary tests examine the impact of legislation on the stock returns of industries affected by a given bill. Since our bill assignment procedure is at the industry-level (rather than at the firm-level, since individual firms are rarely mentioned in bills), we compute the value-weighted returns to all 49 Fama-French industries, and use these value-weighted industry returns as our outcome variables.

Table 2 presents our key result. As noted above, we use the votes of "interested" Senators as a vehicle for determining the likely impact of a piece of legislation. Specifically, we "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. Recall that interested Senators on a given bill are those where an industry affected by the bill is a "Top 3" industry in that Senator's home state (where industries are ranked within each state by total aggregate firm sales). We then compute the Economic Interest signing measure by computing the ratio of positive votes of all interested Senators (by dividing their total number of yes votes on a bill by their total number of votes); and then comparing this number to the ratio of positive votes of all uninterested Senators. If the ratio of positive votes by interested Senators is greater than that for uninterested Senators, we call this a "positive" bill for the industry in question. By contrast, if the ratio of positive votes for interested Senators is less than that for uninterested Senators, we call this a "negative" bill for the industry.

We then form a simple "Long" portfolio that buys the value-weighted industry portfolio where the Economic Interest signing measure is positive, and a "Short" portfolio that sells the value-weighted industry portfolio where the Economic Interest signing measure is negative.[7] In Panel A of Table 2, affected stocks do not enter the portfolio until the month following the passage of a bill, and portfolios are rebalanced monthly.

Panel A of Table 2 reports the average monthly "Long-Short" portfolio return for a portfolio that buys the "Long" portfolio and sells the "Short" portfolio each month.

[7] We also checked a "neutral" portfolio which is comprised of all industries with no legislative activity in month *t*. The alpha of the neutral portfolio is 2 bps per month for both the three- and four-factor model, and statistically indistinguishable from zero.

Panel A shows that the Long/Short portfolio based on this strategy earns large abnormal returns. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weighted market index (see Fama and French (1996)). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weighted market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weighted market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)).

Using excess returns, CAPM alphas, 3-factor alphas, or 4-factor alphas, the Long/Short portfolio consistently earns large abnormal returns, ranging from 76 basis points per month ($t$=2.44) to 92 basis points per month ($t$=3.01). The 92 basis points per month implies over 11% per year in risk-adjusted abnormal returns, trading only value-weighted industry portfolios. Most of this spread comes on the short side, with the abnormal returns to the short portfolio ranging from 71 to 83 basis points per month ($t$=2.40 and $t$=2.80, respectively), suggesting that focusing on cases when interested Senators are disproportionately negative with respect to a bill that ultimately passes is particularly profitable. This result suggests that simply by focusing on the votes of interested Senators, one can determine the subsequent impact of legislation after its passage, and that the market does not recognize this impact.[8]

Next we investigate the returns to these industry portfolios in the six months leading up to and including the month of passage. We examine returns several months prior to the ultimate passage of the law to test the idea that the market may incorporate value-relevant information about legislation before its ultimate passage (as in Gao, Liao, and Wang (2011)). However, Panels B and C of Table 2 reveal little evidence of run-up in the pre-period, suggesting that the market's response to the information in legislation is indeed delayed.

[8] We have also computed this Economic Interest signing measure within party (i.e., comparing an interested Senator's vote only to the other uninterested Senator's *within* her party). The raw spread is actually slightly larger using this measure, 88 basis points per month ($t$=3.26).

### *4.2 Announcement Effects and Event-Time Returns*

Table 2 examined the six months leading up to the bill, the month of passage, and the month following the passage of the bill. From Table 2, there did not appear to be any significant run-up in pre-passage returns (i.e., probabilistic revelation of passage of the bill). In Figure 2, we examine more closely the days leading up to (and following) the passage of the bill, and extend the window to six months following bill passage. Figure 2 shows the event-time Cumulative Abnormal Returns (CARs) to the spread (Long-Short) portfolio returns (equivalent to Column 3 of the panels in Table 2). CARs are computed for each side of the portfolio individually using market-adjusted returns, with the figure showing the returns to the spread portfolio of these CARs.

First, from Figure 2 there seems to be little run-up in the days leading up to the passage of the bill, as the average CAR from day $t$-10 to day 0 is only 4 basis points. We observe a modest, and statistically insignificant, cumulative announcement effect over the day 0 to day $t$+5 period of around 32 basis points. However, following passage of the bill, the returns then significantly drift upward for the next three months (60 days), then flatten, and remain flat thereafter.

One might still wonder why the price response is faster here than to other delayed-price responses such as to firm-level M&A, SEOs, or earnings. One part of the explanation might be that these industries have industry-lobbying groups, created to pass laws in an industry's favor, and then perhaps also to broadcast these legislative results to the market. These industry lobbyist organizations may simply have more scope, resources, motivation, or credibility than an individual firm following a firm-event (like an SEO or earnings announcement). It does appear that industry lobbying groups engage in this type of activity. An example for the Dairy Farmers of America is here: http://www.dfamilk.com/newsroom/press-releases/tax-relief-act-disappointment-dairy-farmers. We found similar announcements from other industry groups including: The Alliance of Automobile Manufacturers, The General Aviation Manufacturer's Association, and The Investment Company Institute.

Note that uncertainty leading up to the vote could impact this return pattern in Figure 2. Thus, close votes may see less of a return run-up, but then have an amplified initial return (passage-day return), as the uncertainty is resolved. However, the median bill in our sample from Table 2 and Figure 2 garners 85 yes votes (out of a total of 100 possible votes), indicating a large margin of passage. Even the 25th percentile has 69 yes votes, suggesting we simply do not have that many bills that had much uncertainty of passage leading up to the vote. Even with these non-close votes, we are finding that the average bill (which is not a close vote) appears to have very little pre-passage run-up in return, and has returns that drift upward for a long period of time following passage. Thus, the delayed updating to information shown in Figure 2 appears to have little to do with the closeness of the vote, or the immediate updating of a previously uncertain vote outcome. Instead, it is more consistent with the market not fully understanding and taking into account the economic interests of the legislators involved, their impact on voting behavior, and the resulting impact of legislation on firms.

### *4.3 Short Side Returns*

One of the interesting aspects of Panel A of Table 2 is that most of the return predictability seems to be coming through the short side of the portfolio. That is to say, the bills where interested senators seem to be especially negative relatively to uninterested senators seem to result in the large, significantly negatively future returns that comprise most of the long-short portfolio return. A trading-cost friction (i.e., short-sale constraint) argument for the pattern seems less plausible here than in many studies, as we are trading using simple value-weighted industry returns. We thus conduct a number of analyses to examine these returns in more depth.

First, we simply examine all months of signals for the long and short portfolios. The results in Table 2 report only those calendar months where both a long and short signal exist. However, there can be months where solely a bill on which interested senators were more positive passed (a long), or solely a bill on which interested senators were more negative passed (a short). When looking at all months, we do begin to see modest predictability on the positive side. When using all of the months (161 and 175 for the long and short sides, respectively), as opposed to the 155 where both exist, the Carhart four-factor alpha is 34 basis points a month ($t$=1.76) on the long side, relative to the 14 basis points from Table 2. The short side alpha is -75 basis points ($t$=2.76), nearly identical to that in Table 2.

To further explore this, though, we next examine the relative "positivity" or "negativity" of interested senators on the bills in question. For Table 2, we code bills as good or bad for the industry (long or short) based simply if interested senators are more positive or more negative than the rest of the Senate. It turns out that senators are much more negative on bad bills than they are positive on good bills, which may explain why the negative bills predict much lower future returns for the associated industries. For instance, on bills negative for the industry interested senators are on average 19.37% more negative, while being only 12.00% more positive on good bills. The difference of 7.37 percentage points is highly significant ($p<0.01$). The difference exists throughout the distribution with the 75$^{th}$ percentile of negativity being 27.35% (versus 17.02% for positivity), and the 95$^{th}$ percentile being 61.96% more negative (but only 34.83% more positive). The difference in relative voting behavior on good versus bad bills for industries suggests that a continuous measure of the difference in voting behavior between interested and uninterested senators, as opposed to the discrete relative measure from Table 2, may better capture the impact of voting differences. This is precisely what we implement in Section 4.4 below (Table 3).

### *4.4 Cross-Sectional Regressions*

Next we employ monthly Fama and Macbeth (1973) cross-sectional regressions each month of industry-level returns on industry-level characteristics, to further assess the predictive power of our economic interest signing approach. A benefit of using Fama-Macbeth regressions (as opposed to the portfolio approach used above) is that it allows one to employ a continuous measure of interested voting, and to preserve full information through the use of all observations.

The dependent variable in these regressions is the value-weighted future industry return (in month $t+1$). The variable of interest in these regressions is *Interested Vote*, which is the difference between the percentage of interested senators voting in favor of the passed bill and uninterested senators voting in favor of the bill. Therefore, *Interested Vote* is positive when interested senators are more in favor of the bill, and negative when interested senators are more negative on the bill. We also include a number of control variables. Unlike individual stock returns, however, which exhibit well-known size (Banz

(1981)), book-to-market ((Rosenburg. Reid, and Lanstein (1985), Fama and French (1992)), and momentum (Jegadeesh and Titman (1993), Carhart (1997)) effects, there is much less evidence of return predictability in industry returns. There does appear to be industry return momentum (see Moskowitz and Grinblatt (1999)), and as such we control for industry-level momentum (i.e., the industry return from months $t$-12 to $t$-1) in our regression tests. Nevertheless, we also include controls on the right-hand size for measures of industry-level average size, book-to-market, investment (CAPEX), and assets.

Table 3 presents the results of these monthly cross-sectional predictive regressions. Column 1 of Table 3 shows that interested senators' votes have significant predictive ability for future industry returns, with the coefficient on *Interested Vote* being 0.025 ($t$=3.03). This indicates that the more positive interested senators are relative to uninterested senators on the given bill, the higher the future returns are for affected industries of the bill, consistent with the results in Table 2. Controlling for industry momentum, as well as industry-level measures of size, book-to-market, investment, and assets, has little effect on this result. In the full specification in Column 5, *Interested Vote* has a coefficient of 0.037 ($t$=2.30). This implies that a one standard deviation higher *Interested Vote* (interested senators voting roughly 10% more in favor of the bill than uninterested senators) implies a 37 basis point higher return for the industries impacted by the bill. These findings reinforce the results from Table 2 with a continuous measure, also demonstrating that our economic interest signing approach is not simply picking up industry-level characteristics.[9]

Lastly, up to this point we have focused on those bills which pass, as these are the bills that have the potential to actively change the regulatory environment for the treated firms. We understand that bills that fail could also contain information for firms even if

[9] Another way to examine whether the result is increasing in the Interested Vote signal (i.e., bills where interested Senators are especially negative (positive) should have even larger negative (positive) returns) is by using non-parametric sorts. Our analysis is already conducted at the industry portfolio level, and while we do have enough effected industries by legislation each month to form quintiles, we break on the median of positivity and negativity to form two L-S portfolios: one of the extreme voting differences of interested Senators, and one of the less extreme differences. We find that returns are significantly larger as the voting differences become more extreme. In fact, these extreme portfolios have a large and significant L-S alpha of 90 basis points per month ($t$=2.54), while the less extreme L-S portfolio is small and insignificant (only 4 basis points per month).

they keep the status-quo regulatory regime (if the market probabilistically weights the likelihood of passage). However, as evidence against this probabilistic price revelation, both Table 2 and Figure 2 indicate that there is no run-up in returns in the months (or days) leading up to the passage of these bills. Nonetheless, we explicitly examine failed bills using our economic interest signing, as well. First, there are only 20 percent as many failed bills as there are bills that pass, likely reflecting the fact that bills expected to fail are simply not brought up for vote. For these failed bills, we replicate the exact specifications of Table 3, with our economic interest signing now measured as interested senators' negative voting relative to how negative non-interested senators vote on the same bill (so the predicted sign on *Interested Vote* is again positive). In the analog to the full specification of Column 5 in Table 3, the coefficient on *Interested Vote* is 0.023 ($t$=0.79). Thus, we find that while the direction of the coefficient is as predicted, the magnitude is about two-thirds the size of that of votes passed, and not statistically significant (in part due to the smaller sample size).

### *4.5 Alternative Signing Approaches: Naïve Signing, Text-Based Signing, and Market-Based Signing*

One possible concern regarding our results up to this point is that any reasonable manner in which one "signs" these bills may lead to abnormal returns if the market is truly ignoring the likely impact of legislation. To address this concern, we examine a number of alternative methods for signing bills.

We begin by examining the returns to a naïve strategy for signing the direction of impact of legislation on the underlying affected industries. Specifically, in Panel A of Table 4 we perform a calendar-time portfolio approach as follows: for each final Senate vote on a bill, we examine the stock returns of affected firms following the passage or failure of the bill. We form a "Long" portfolio that buys the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill passes, and a "Short" portfolio that sells the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill fails. Affected stocks do not enter the portfolio until the month following the passage of a bill, and portfolios are rebalanced monthly. Note that this strategy ignores the specific composition of legislators' votes entirely, as well as the text of the bill. Thus, this strategy will misclassify bills that pass that are negative for industries (such as the one shown in Figure 1, which passes but is negative for the oil industry), and as a result is less likely to produce returns.

As Panel A of Table 4 shows, the returns to this naïve strategy for signing bills are essentially zero. Also, there does not appear to be any price run-up in the period prior to and including the month of passage/failure of a bill, as the long-short portfolio return in the pre-vote period (using returns from months $t$-6 to $t$, where month $t$ is the month of passage/failure) is also negligible. This suggests that on average there is no new information in whether a bill passes or fails regarding how these bills will impact the underlying firms.

Next we employ a slightly more nuanced approach for determining the impact of legislation on firms. Specifically, in Panels B and C of Table 4, we focus on the set of bills that ultimately passed, and attempt to "sign" each bill using different forms of textual analysis. In Panel B, we form a "Long" portfolio that buys the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill contains a below-median number of negative words (defined using the Harvard psychosocial dictionary (see Tetlock (2007)), and a "Short" portfolio that sells the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill contains an above-median number of negative words. Panel C conducts the identical tests as in Panel B, except that negative words are defined using the Loughran and McDonald (2011) word lists, which were specifically designed for financial text.[10]

Panels B and C show that in both the post-passage period (month $t$+1) and in the pre-vote period (months $t$-6 to $t$, where month $t$ is again the month of passage), there is no impact on the returns of the underlying affected industries. Thus, trying to infer the impact of legislation on firms by using textual analysis that seeks to measure the "negativity" of a bill is unhelpful in trying to sign a bill's likely impact. This is perhaps not surprising given the way bills are typically written, in that they are legal documents that are less likely to easily convey sentiment.

[10] Loughran and McDonald (2011) argue that almost three-fourths of the words identified as negative by the widely used Harvard Dictionary are words typically not considered negative in financial contexts. They develop an alternative negative word list, along with five other word lists, that seeks to better reflect tone in financial text.

Lastly, we also explore a market-based signing approach, where we use the announcement day returns (on the day of passage), and also the returns in the six-month period pre-passage to again "sign" the likely impact of the legislation. Panel D of Table 4 shows that a market-based approach that places positive announcement-day passage bills in the Long portfolio, and negative announcement-day passage bills in the Short portfolio yields no significant predictability for future month $t+1$ returns (it does produce large month $t$ spreads of course, by construction). Similarly, Panel E indicates that sorting based on the prior six-month cumulative market-adjusted returns of the affected industries again produces no spread in future returns.

Collectively, the findings in Table 4 help to motivate our approach, since simple methods for inferring the likely impact of legislation on firms reveal no significant predictability for future returns.

## 5. Real Effects

In this section we examine the real effects of legislation on industries. Since our economic interest-based signing yields substantial return predictability in the months immediately following a bill's passage, the next question is to what extent this return predictability indicates real effects on the underlying industries being affected by these bills. To explore this issue, we examine both shorter-term future news (such as quarterly analyst revisions in earnings estimates, and earnings surprises)—to see if these coincide with the horizon over which the legislation appears to be get incorporated into prices, and longer-term industry fundamentals (such as annual sales growth and future profitability).

Panel A of Table 5 explores quarterly changes in industry news over the three months following a bill's passage. The idea behind this horizon is that from Figure 2 we see most of the information in the legislation being incorporated into prices by roughly 3 months (60 trading days) following passage, as returns then plateau (with zero subsequent reversal). One way in which this information could be revealed to the market over this time period is through analyst revelation of the positive information.

Hence our first measure of news about industry fundamentals from analysts is revisions in analyst's consensus earnings estimates (drawn from the I/B/E/S summary file). For each industry we construct a value-weighted average of each firm's consensus 1-year earnings-per-share (EPS) estimate, and compute the change in this figure over the subsequent three months. We then use this measure as the left-hand side variable, and employ predictive Fama-MacBeth regressions each month at the industry-level, exactly as in Table 3 above.

Column 1 of Table 5 shows that interested senators' votes have significant predictive ability for future industry analyst earnings revisions, with the coefficient on *Interested Vote* equal to 1.346 ($t$=2.14). This result indicates that the more positive interested senators there are relative to uninterested senators on a given bill, the more positive future earnings revisions there are for the affected industries in the bill, consistent with the results in Tables 2 and 3. Again controlling for industry momentum, as well as industry-level measures of size and book-to-market, has little effect on this result. In the full specification in Column 3, *Interested Vote* has a coefficient of 2.348 ($t$=2.14). This implies that a one standard deviation higher *Interested Vote* implies a 0.26 higher change in analyst estimates (relative to a median estimate level of 2.80).

Next we explore industry-level earnings surprises, and examine if they tend to rise (fall) in the months subsequent to bill passage. Consistent with the impacts on real-effects following passage, we find that SUEs (Standardized Expected Earnings, computed as in Bernard and Thomas (1989)) are significantly higher (lower) following positive (negative) bill passage measured by interested Senators. In particular, in the exact analog of Columns 1-3, but now with respect to earnings surprises, we show in Columns 4-6 that *Interested Vote* is a positive and significant predictor over the subsequent 6-12 months. For instance, in the 6-month regression shown here (results are similar for 9-month and 12-month changes), Interested Vote has a coefficient of 1.166 ($t$=2.09), which translates into a move nearly two-thirds of the inter-quartile range (the dependent variable has a slightly negative mean of -0.03). Taken as a whole, the evidence in Panel A suggests that the timing of the return predictability we document in Tables 2 and 3 lines up with the revelation of future fundamental industry-level news.

Panel B of Table 5 explores changes in industry fundamentals over the longer year horizon following a bill's passage. Even if prices update to the new information in (on average) 3 months following the bill's passage, given that prices never subsequently reverse, it suggests that our Economic Interest measure is in fact capturing true information important for firm fundamental values. We explore this using two standard measures of future industry-level real performance: a) industry-level value-weighted average profitability (defined as return on assets, i.e., net income divided by lagged assets, measured in year t+1, and drawn from CRSP/Compustat); and b) industry-level value-weighted average sales growth (measured from year $t$ to year $t$+1, again drawn from CRSP/Compustat). Column 3 of Panel B shows that interested senators' votes have significant predictive ability for future industry profitability, with the coefficient on *Interested Vote* equal to 0.045 ($t$=1.97). A one standard deviation higher *Interested Vote* implies 0.005 higher future industry profitability (relative to average profitability of 0.06, so roughly an 8% increase). Columns 4-6 reveal a similar result for future sales growth; the coefficient in Column 6 (=0.209, $t$=1.70) indicates that a one-standard deviation higher *Interested Vote* implies 0.02 higher future industry sales growth (relative to average sales growth of 0.07, so more than a 25% increase).

Collectively, the findings in Table 5 suggest that both the timing and the magnitude of the return predictability we document in Tables 2 and 3 are reasonable given the subsequent news about industry fundamentals that appears over the next few months following bill passage, and the real effects on industry profitability and sales growth that emerge over the following year.

## 6. Tests of the Mechanism: Concentrated Interests, Industry Relevance, and Bill Complexity

In this section we explore a variety of ancillary tests in order to help pin down the mechanism behind our main result.

### *6.1 Concentrated Interests*

We start by refining our economic interest signing measure even further. The idea behind our first test is that the voting behavior of a particular subset of interested

Senators may be even more informative than the voting behavior of the entire group of interested Senators. In particular, focusing on the Senators that have "concentrated" interests in a particular industry may be especially informative.

In Table 6 we perform the same calendar-time portfolio tests as in Table 2, except that we employ a slightly different signing measure. Rather than looking at all interested Senators, in Panel A we focus only on the voting behavior of Senators whose largest industry (by market capitalization)[11] represents an above-median level of concentration in that state relative to all other states that also have any firms in that industry during that time period. Concentration is measured as the share of a state's total market cap that is made up of the industry in question. The idea is that these Senators will have an even greater vested interest in the fortunes of this particular industry as compared to the other significant industries in their states; hence their voting signals on the bills that affect these particular industries may be quite informative. Table 6 shows that this hypothesis is confirmed in the data. The value-weighted industry returns that accrue to the Long/Short portfolio using this refined signing measure are again large and significant, ranging from 67 to 97 basis points per month. Further, in Panel B when we replace the "above-median" relative level of concentration with an 80% relative level of concentration (as shown in Panel B), this result is even stronger: the Long/Short portfolio earns between 84 ($t$=1.99) and 105 ($t$=2.27) basis points in this specification. This result suggests that focusing on the Senators with the largest vested interests does improve the signal about the likely impact of the bill in question.

### *6.2 Industry Relevance and Home State Firms Only*

In Table 7 we explore our industry assignment procedure in more depth. Specifically, we exploit the idea that some bills may pertain mainly to a particular industry, even though a few industries may be coded as "affected" by a given bill. Thus while our industry assignment procedure (as described above, and in the Appendix) is quite conservative in ensuring that only affected industries are coded as such, there is still variation in the extent to which one industry may be affected by a bill relative to another industry. In Table 7 we exploit this variation in two ways. First, in Panel A we focus

[11] All of the results in this section are identical if sales are used in place of market capitalization.

solely on cases where the industry in question is the "most" affected of all industries in a given bill; in these cases we only use these industries to compute our industry-level value-weighted return. Panel A shows that exploiting this variation again strengthens the main result, yielding a Long/Short portfolio return ranging from 92 to 130 basis points per month.

In Panel B we refine this measure even further by only including the returns of those firms in a given industry who happen to be also located in one of the "interested" Senators' home states. The idea behind this is that even though Senators cannot get individual firms named as beneficiaries of a given piece of legislation (as we describe above, empirically this happens almost never), the Senator might be able to shade the legislation toward the portion of the industry that resides in his or her state. For instance, if the Senator has a large amount of oil refinery (as opposed to oil exploration) going on in their state, the Senator can shade a bill that is positive toward the oil industry to include especially positive language toward oil refiners.

Panel B shows evidence consistent with this idea. The refinement of including only those firms in the interested Senator's state (versus including the entire industry) strengthens the result even further: the Long/Short portfolio return in this specification ranges from 174 to 201 basis points per month (over 24% in abnormal returns per year).

### *6.3 Information Diffusion Mechanism: Bill Complexity and/or Limited Attention*

To further explore the mechanism driving our findings, we also investigate if limited attention and/or complicated information processing are at work in our setting.

First we examine the idea of limited attention. To do so, we divide the sample into high-voting activity months and low-activity voting months, with the idea that high-voting activity months are the times where investors have to parse through many different pieces of legislation, and are less likely to correctly discern the impact of any given bill (i.e., these are limited attention times); this approach is similar to that of Hirshleifer, Lim, and Teoh (2006), who argue that days with lots of earnings announcements are distracting to investors and are associated with greater post-earnings announcement drift. In unreported tests we find only mild evidence that attention is driving the underreaction to legislation that we document in this paper: in high-voting/limited-attention months, the Long-Short economic interest portfolio spread is 103 basis points per month ($t$=2.40), and in low-voting/high-attention months, the spread is only 80 basis points ($t$=1.88); however, this difference is relatively modest in magnitude and is statistically insignificant.

Next we investigate the complexity of the bills in question. Specifically, we test the idea that the market may have a harder time deciphering the likely impact of a complicated bill as opposed to a simpler bill, and hence we should observe more return predictability following the passage of complex bills.[12]

The first measure we use to capture bill complexity is bill length. In particular, we define this as the total number of words in a bill divided by the number of affected industries (i.e., bill length per industry affected by the bill). The results are reported in Table 8, Panels A and B. Panel A shows that the long-short economic interest portfolio spread on "complex" bills (defined as those with above-median word length) earns 80 basis points per month in raw returns ($t$=2.78) and 100 basis points per month in 4-factor alpha ($t$=3.50), while the non-complex bills (in Panel B) earn returns that are close to zero, and statistically insignificant. These results are consistent with the idea that the market has more difficulty processing the likely impact of complicated pieces of legislation as opposed to more routine bills.

One potential issue with identifying the complexity of bills solely by length is that complexity does not have a one-to-one mapping with the length of the bill. This is because many routine annual bills (e.g., routine appropriations bills) are among the longest bills. Thus, we construct an alternative measure of complex bills that minimizes this problem, by simply computing the number of times a given bill was voted on, with the idea that more complicated bills tend to get voted on more often. The political science literature (see, for example, Clausen (1973) and Austin-Smith and Riker (1987)) indicates that multiple votes on a given bill are often due to technical issues that get tacked on to bills (e.g., amendments) as these bills make their way into law, and not necessarily due to controversy and contentiousness.

In Table 8 Panels C and D we split bills using this alternative measure of bill

[12] See Cohen and Lou (2012) for evidence of substantial return predictability from a set of easy-to-analyze (standalone) firms to their more complicated (conglomerate) peers.

complexity. In Panel C, we focus solely on the set of complex bills, where complex is defined as a bill that was voted on more times than the median bill (the median number of votes on a bill is 2). Panel C shows that the economic interest spread portfolio earns large positive abnormal returns, ranging from 85 basis points in raw returns ($t$=2.19) to 90 basis points ($t$=2.28) in four-factor alphas. Meanwhile, Panel D shows that the set of non-complex bills is associated with much smaller (and insignificant) return predictability. Taken as a whole, these findings provide suggestive evidence that complicated information processing is a potential mechanism driving our results.

## 7. Robustness and Additional Tests

### *7.1 Robustness: Economic Interest Thresholds*

In Table 9 we provide an additional test that helps to establish the robustness of our main result, and help to verify some obvious implications of our findings. Specifically, we test the idea that as we broaden our measure of "interested" Senators, our approach should work less well. For example, if we focus on the votes of Senators where any of her Top 5 (or Top 10) industries in her state (as opposed to Top 3) industries are affected by a given bill, we would expect this signal to be somewhat less informative, since these "extra," smaller industries may be less important to the Senator in question. Table 9 shows again that this implication is confirmed in the data, as focusing on the votes of Senators using a Top 5 filter yields a smaller but still significant effect (ranging from 56 to 62 basis points per month), and using a Top 10 filter yields an insignificant effect.

Overall, these findings (as well as those in Tables 6 and 7) help to establish the robustness of the main result in this paper, by showing that logical alterations of our basic economic interest signing approach yield results in the expected directions; when we broaden our signing approach, the results are weaker, and when we narrow our approach to even more concentrated economic interests, the results are stronger.

### 7.2 *Other Influences: Personal Stockholdings and Lobbying*

Next we explore additional potential influences on the voting behavior of Senators, in addition to the firm-level economic interest approach that we have utilized throughout this paper.

First we examine the personal stockholdings of the Senators in our sample. The idea here is that politicians may have a direct, personal financial interest that leads them to vote a certain way, apart from (or in addition to) any political interest, if they have significant personal stockholdings in a particular industry. We obtain the individual stockholdings and transactions of all Senators from OpenSecrets.org for the period 1997-2008.[13] It turns out that sorting bills by exploiting variation in these holdings alone (i.e., going long affected industries after bill passage that are held by politicians, and going short affected industries after bill passage that are not held by politicians), with no regard for their voting behavior, produces no spread in future abnormal returns.[14] If we instead refine our basic economic interest signal by focusing solely on the votes of Senators who *also* have a personal stockholding in the affected industry, Appendix Table A3 shows that using this approach we obtain similar results in magnitude to those in Table 2; refining this test even further by focusing only on local holdings yields similar results. We conclude that any signal derived from Senators' personal portfolios is second-order relative to the economic interest approach we employ in this paper (perhaps due to re-election incentives to the Senate, possible election to another office such as Governor of their home state, or incentives to maximize local good-standing for employment in their home-state after the end of their legislative career).

Next we examine data on lobbying expenditures. Table 10 presents the results of tests seeking to explore the impact of this "other influence" on the strength of our economic interest signal. The lobbying data we use (again obtained from OpenSecrets.org) unfortunately is not available at the level of a given piece of legislation, but is instead available only by industry and by year, and only since 1999. In Panel A of

[13] This is the same data used in Hainmueller and Eggers (2011a, 2011b); consistent with their results, in unreported tests we find little evidence of outperformance in Senators' stockholdings, and only modest evidence of outperformance in Senators' "local" stockholdings (i.e., firms headquartered in a Senator's home state). See also Ziobrowski et al. (2004, 2011).

[14] This is true if we use a binary measure (held vs. not held), as well as a variety of thresholds to define "substantial" holdings; it is also true if we focus only on "local" stockholdings.

Table 10 we first replicate our main result (from Table 2) over the sample period for which lobbying data is available (1999-2008), and verify that our findings are large and significant over this sub-period as well.

We then examine the subset of affected industries for which lobbying is most pronounced in a given year (above the 80th percentile of industries in terms of lobbying dollar expenditures).[15] Our hypothesis is that the results should be weaker for these industries, since we do not know to whom these lobbying dollars are flowing. Thus our set of interested Senators may no longer be the full set of "interested" Senators; one would want to include all the Senators that received lobbying dollars from a given industry as now potentially treated, or "interested" in the given industry. In fact, one would expect lobbying dollars to be more likely to go to the other Senators (our "uninterested" Senators), since lobbyists would not need to waste money lobbying the interested Senators who already are going to vote to protect the industry in question. Thus lobbying plausibly counters the effect of location, since Senators' voting decisions are now affected by lobbying activity in addition to location. This reduces the distance between our "interested" and "uninterested" legislator measure (as some of the previously uninterested legislators are now interested), and so reduces the power and predictability of the measure. Panel B of Table 10 shows that this conjecture is indeed confirmed in the data: the Long/Short portfolio return ranges from 44 to 65 basis points per month and is no longer significant when we focus solely on the affected industries for whom lobbying is most pronounced.

## 8. Conclusion

In this paper we demonstrate that legislation has a simple, yet previously undetected impact on firm prices. We exploit the fact that legislators who have a direct interest in firms often vote quite differently than other, uninterested legislators on legislation that impacts the firms in question. Taking a simple approach of focusing solely on the more incented legislators' votes yields a portfolio that has large outperformance. We show that a long-short portfolio strategy that buys the affected

[15] Using an above-median threshold yields similar results.

industries when interested senators are especially positive, and shorts the affected industries when interested senators are especially negative, yields returns of between 76 to 92 basis points per month. These returns show little to no run-up prior to bill passage, but continue to accrue past the month following bill passage, and do not reverse. Importantly, these industries also see significantly more positive earnings surprises and positive analyst revisions and following passage of the bill, and experience positive shocks in terms of future sales and profitability. Collectively, these findings suggest that we are truly capturing information from these interested legislators that is important for firm value, and that the market does not seem to be realizing.

We also provide evidence on the proposed mechanism of interested legislators. For instance, the abnormal returns are larger when we focus solely on the industries that make up an especially large part of the economic activity in a legislator's state. Further, the returns are also higher when we restrict to solely the most important industries (i.e., the industries that are likely to be most impacted), and the returns are larger still when we focus within this industry on those firms located solely in interested legislators' states. In addition, the return predictability we document is large and significant for complicated bills, but much less so for routine bills, consistent with the idea that the market has a much harder time deciphering the likely impact of complicated pieces of legislation relative to more mundane bills. Lastly, when industry lobbying groups spend large amounts of capital, likely lobbying legislators outside of the states where the industry is already important, this dampens the predictive impact of "interested" legislators.

In sum, government's impacts on firms are incontrovertible. In this paper, we formalize an important channel of this relationship, and test whether this relationship and its impact is fully understood and incorporated by financial markets. We believe there is a broader implication of our work regarding the need for a deeper understanding of the critical importance of firms' relationships with their legal and political environment, and the actors who form this environment.

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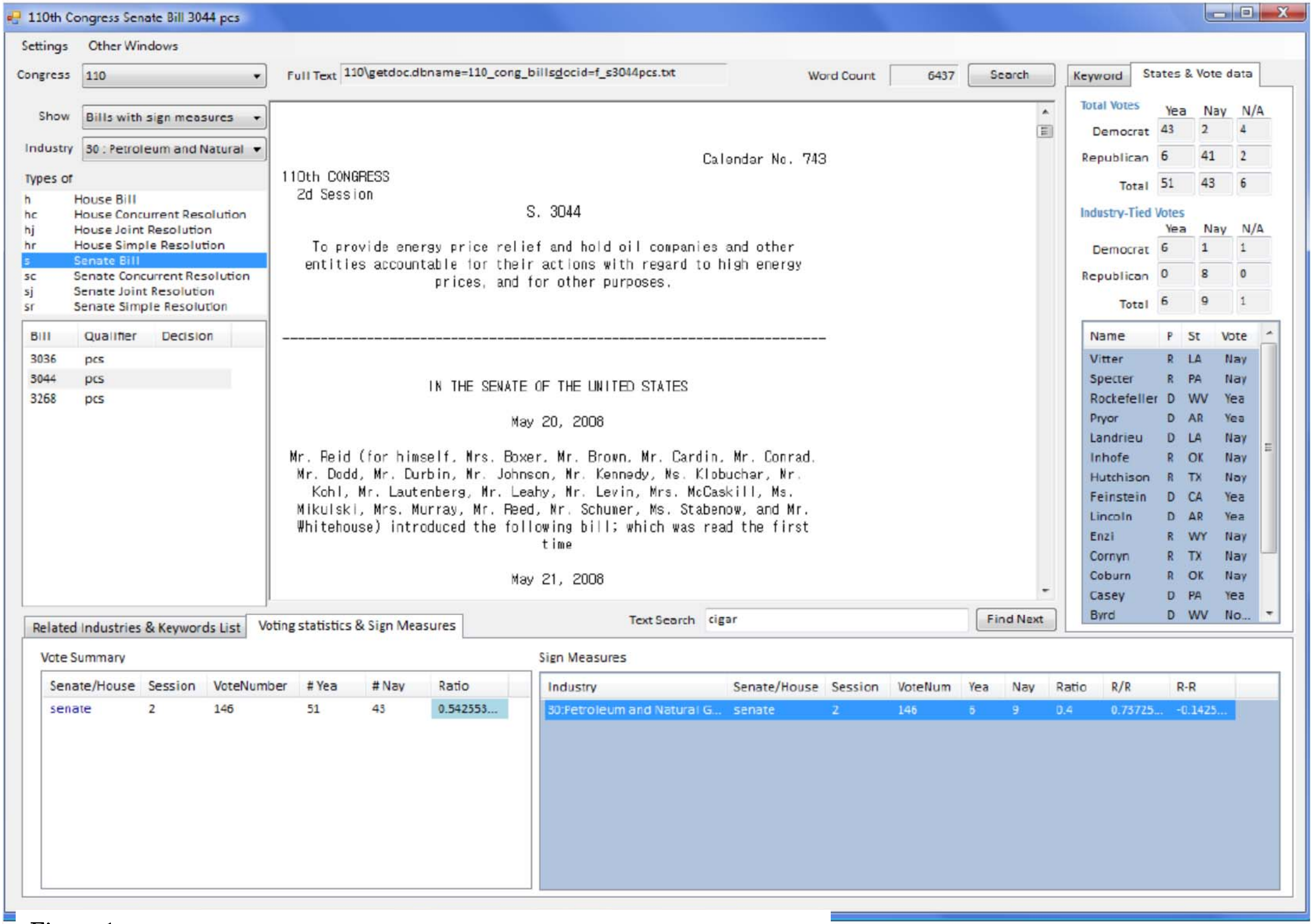


Figure 1.
Congressional Bill Positive/Negative Signing Example

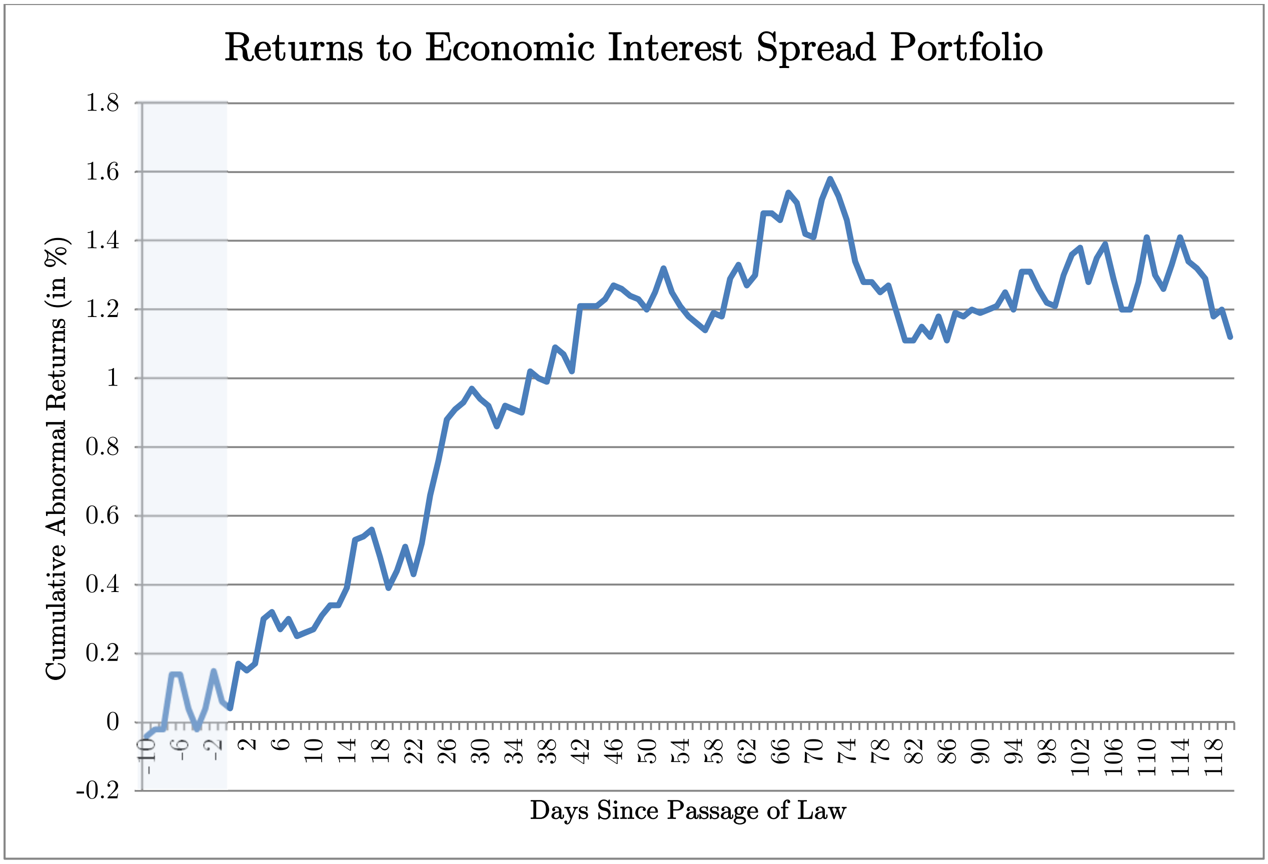


Figure 2.
Cumulative Abnormal Returns (CARs) to Economic Interest Spread Portfolio

This figure shows the event-time Cumulative Abnormal Returns (CARs) to portfolios that invest in industries surrounding legislation passage using the economic interests of senators, specifically the voting of interested senators (as defined in Table 2), to define the legislation's impact as positive (long) or negative (short) on the given industry. CARs are computed for each side of the portfolio individually using market-adjusted returns. This figure then presents the returns to the spread portfolio of industry CARs (long-short) from 10 days before passage to 6 months following passage of the bill (120 days).

## Table 1.
## Summary Statistics

This table reports summary statistics for the sample. The sample period for the main tests is 199001-200812. We "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. Interested Senators on a given bill are those where an industry affected by the bill is a "Top 3" industry in that Senator's home state (where industries are ranked within each state by total aggregate firm sales). We then compute an Economic Interest Signing measure as follows: we compute the ratio of positive votes of all interested Senators by dividing their total number of yes votes on a bill by their total number of votes, and compare this to the ratio of positive votes of all uninterested Senators; if the ratio of positive votes by interested Senators is greater than that for uninterested Senators, we call this a "positive" bill for the industry in question, and if the ratio of positive votes for interested Senators is less than that for uninterested Senators, we call this a "negative" bill for the industry.

| | Years 1990-2008 | | |
|---|---|---|---|
| | Mean | StdDev | Observations |
| Number of Firms in Industry | 144.8 | 153.7 | 6021 |
| Industry Market Capitalization ($ Millions) | 288.1 | 361.0 | 6021 |
| Industry Value-Weight Monthly Return | 0.775 | 6.33 | 6021 |
| Pass (=1) | 0.821 | 0.383 | 6021 |
| Vote_Yes | 73.65 | 18.47 | 6021 |
| Vote_No | 22.49 | 0.399 | 6021 |
| Bill_Sign_Top3Sales | 0.012 | 0.198 | 6021 |
| Vote_Yes_Interested_Top3Sales | 7.7 | 10.1 | 6021 |
| Vote_No_Interested_Top3Sales | 2.4 | 4.6 | 6021 |
| Vote_Yes_NotInterested_Top3Sales | 65.9 | 19.7 | 6021 |
| Vote_No_NotInterested_Top3Sales | 20.1 | 17.0 | 6021 |
| Bill_Sign_Top5Sales | 0.003 | 0.178 | 6021 |
| Vote_Yes_Interested_Top5Sales | 12.0 | 14.2 | 6021 |
| Vote_No_Interested_Top5Sales | 3.8 | 6.6 | 6021 |
| Vote_Yes_NotInterested_Top5Sales | 61.6 | 21.2 | 6021 |
| Vote_No_NotInterested_Top5Sales | 18.6 | 16.3 | 6021 |
| Bill_Sign_Top10Sales | 0.002 | 0.160 | 6021 |
| Vote_Yes_Interested_Top10Sales | 20.4 | 19.9 | 6021 |
| Vote_No_Interested_Top10Sales | 6.5 | 9.6 | 6021 |
| Vote_Yes_NotInterested_Top10Sales | 53.3 | 24.0 | 6021 |
| Vote_No_NotInterested_Top10Sales | 16.0 | 15.2 | 6021 |

## Table 2.
## Calendar-Time Industry Portfolio Returns: Economic Interest Signing

This table examines the stock returns of industries that are classified as affected by a given piece of legislation, after that given piece of legislation passes, for the subset of bills that are passed by the Senate. We perform a calendar-time portfolio approach as follows: for each final Senate vote on a bill that ultimately passes, we examine the stock returns of affected firms following the passage of the bill. We "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. Interested Senators on a given bill are those where an industry affected by the bill is a "Top 3" industry in that Senator's home state (where industries are ranked within each state by total aggregate firm sales). We then compute an Economic Interest Signing measure as follows: we compute the ratio of positive votes of all interested Senators by dividing their total number of yes votes on a bill by their total number of votes, and compare this to the ratio of positive votes of all uninterested Senators; if the ratio of positive votes by interested Senators is greater than that for uninterested Senators, we call this a "positive" bill for the industry in question, and if the ratio of positive votes for interested Senators is less than that for uninterested Senators, we call this a "negative" bill for the industry. We then form a "Long" portfolio that buys the firms in each industry that we assign to a bill (weighted by market capitalization) where the Economic Interest Signing measure is positive, and a "Short" portfolio that sells the firms in each industry that we assign to a bill (weighted by market capitalization) where the Economic Interest Signing measure is negative. In Panel A, affected stocks do not enter the portfolio until the month following the passage of a bill, and portfolios are rebalanced monthly. In Panel B, affected stocks enter the portfolio in the month of the passage of a bill, and portfolios are rebalanced monthly. In Panel C, affected stocks enter the portfolio 6 months prior to the passage of a bill, and stay in the portfolio until the month prior to the passage of the bill. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). *t*-statistics are shown in parentheses, and 1%, 5%, and 10% statistical significance are indicated with ***,**, and *, respectively.

| Panel A: Industry Returns After Passage of Legislation, Interest Based Signing | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| Average Return | 0.63 | -0.14 | 0.76** |
| Standard Deviation | 4.63 | 5.40 | 3.84 |
| CAPM alpha | 0.05 | -0.71** | 0.76** |
| | (0.28) | (-2.40) | (2.44) |
| Three Factor alpha | 0.01 | -0.83*** | 0.84*** |
| | (0.06) | (-3.06) | (2.82) |
| Four Factor alpha | 0.14 | -0.78*** | 0.92*** |
| | (0.77) | (-2.80) | (3.00) |

| Panel B: Industry Returns Around Passage of Legislation, Interest Based Signing | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Vote Month Returns (month t) | | |
| | Long | Short | Long-Short |
| Average Return | 0.33 | 0.33 | -0.01 |
| Standard Deviation | 4.92 | 4.63 | 3.65 |
| CAPM alpha | -0.14 | -0.10 | -0.04 |
| | (-0.61) | (-0.37) | (-0.13) |
| Three Factor alpha | -0.25 | -0.20 | -0.05 |
| | (-1.28) | (-0.77) | (-0.19) |
| Four Factor alpha | -0.16 | -0.29 | 0.13 |
| | (-0.77) | (-1.06) | (0.44) |

| Panel C: Industry Returns Before Passage of Legislation, Interest Based Signing | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Pre-Vote Returns (month t-6 to t-1) | | |
| | Long | Short | Long-Short |
| Average Return | 0.75*** | 0.85*** | -0.10 |
| Standard Deviation | 4.00 | 4.21 | 1.82 |
| CAPM alpha | -0.07 | 0.04 | -0.10 |
| | (-0.66) | (0.27) | (-0.84) |
| Three Factor alpha | -0.21** | -0.03 | -0.17 |
| | (-2.41) | (-0.27) | (-1.41) |
| Four Factor alpha | -0.18** | 0.03 | -0.21 |
| | (-2.05) | (0.27) | (-1.73) |

## Table 3.
## Cross-Sectional Regressions

This table reports Fama-MacBeth cross-sectional predictive regressions of future value-weight industry returns on an economic interest signing measure and various industry-level characteristics, from 1989-2008. The economic interest signing approach is described in Table 2. The dependent variable in each is future one-month returns in month $t$+1 (RET). The variable of interest in these regressions is *Interested Vote*. To construct *Interested Vote* we "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. *Interested Vote* is the difference between the two (so positive when interested Senators on the given bill vote more positively than uninterested Senators, and negative when they vote more negatively). We include various controls on the right-hand side of these regressions for industry-level momentum (i.e., the industry return from months $t$-12 to $t$-1), one-month past industry returns, and measures of industry-level average firm size, book-to-market, investment (CAPEX), and ASSETS. $t$-statistics are shown below the estimates, and 1%, 5%, and 10% statistical significance are indicated with ***,**, and *, respectively.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *Interested Vote* | 0.025*** | 0.032*** | 0.036** | 0.033** | 0.037** |
| | (3.03) | (2.85) | (2.45) | (2.47) | (2.30) |
| *Industry Avg. Size* | | 0.000 | 0.000 | -0.001 | 0.000 |
| | | (0.32) | (0.24) | (0.83) | (0.39) |
| *Industry Avg. Book-to-Market* | | | -2.014 | -0.839 | 0.298 |
| | | | (1.12) | (0.52) | (0.19) |
| *1-Month Lagged Ind. Return*$_{t-1}$ | | | | 0.033** | 0.025 |
| | | | | (1.98) | (1.48) |
| *12-Month Lagged Return*$_{t-12:t-2}$ | | | | 0.018*** | 0.015*** |
| | | | | (3.15) | (2.66) |
| *Industry Avg. CAPEX* | | | | | 0.000 |
| | | | | | (0.61) |
| *Industry Avg. ASSETS* | | | | | 0.000 |
| | | | | | (0.65) |
| Number of observations | 396 | 299 | 299 | 287 | 287 |

## Table 4.
## Calendar-Time Industry Portfolio Returns: Alternative Naïve Bill Signing and Market-Based Signing Approaches

This table examines the stock returns of industries that are classified as affected by a given piece of legislation. In Panel A we perform a calendar-time portfolio approach as follows: for each final Senate vote on a bill, we examine the stock returns of affected firms following the passage or failure of the bill. We form a "Long" portfolio that buys the firms in each industry that we assign to a bill (weighted by market capitalization) where the bill passes, and a "Short" portfolio that sells the firms in each industry that we assign to a bill (weighted by market capitalization) where the bill fails. Affected stocks do not enter the portfolio until the month following the passage of a bill, and portfolios are rebalanced monthly. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. In Panels B and C, we focus on the set of bills that ultimately passed, and attempt to "sign" each bill using different forms of textual analysis. In Panel B, we form a "Long" portfolio that buys the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill contains a below-median number of negative words (defined using the Harvard psychosocial dictionary (see Tetlock (2007)), and a "Short" portfolio that sells the firms in each industry that we assign to a bill (weighted by market capitalization) when the bill contains an above-median number of negative words. Panel C conducts the identical tests as in Panel B, except that negative words are defined using alternative definition categories (see Loughran and McDonald (2011)). In Panels D and E, we sign the bills using two market-based signing approaches: Panel D uses the return response on the day of the bill passage (positive announcement effects for an industry mean the industry goes in the "Long" portfolio next month, and vice versa for the short portfolio); Panel E uses the return run-up in the prior 6 months before bill passage to define the portfolios (positive cumulative market-adjusted returns for an industry mean the industry goes in the "Long" portfolio next month, and vice versa for the short portfolio). *t*-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| Panel A: Industry Returns Around Law Passage, Naive Signing Approach | | | | |
|---|---|---|---|---|
| | Sorting Variable: Long = Pass, Short = Fail | | | |
| | Future Returns (month t+1) | | | Returns: t-6,t |
| | Long | Short | Long-Short | Long-Short |
| Average Return | 0.49 | 0.57 | -0.09 | 0.02 |
| Standard Deviation | 4.36 | 4.46 | 2.29 | 1.53 |
| CAPM alpha | 0.02 | 0.12 | -0.10 | 0.05 |
| | (0.12) | (0.42) | (-0.36) | (0.49) |
| Three Factor alpha | -0.02 | 0.04 | -0.07 | 0.03 |
| | (-0.11) | (0.16) | (-0.24) | (0.26) |
| Four Factor alpha | -0.05 | -0.02 | -0.02 | 0.04 |
| | (-0.25) | (-0.08) | (-0.09) | (0.31) |

| Panel B: Industry Returns Around Law Passage, Textual Analysis (Harvard Dictionary) Approach | | | | |
|---|---|---|---|---|
| | Sorting Variable: Long = Passed and Positive Text, Short = Passed and Negative Text | | | |
| | Future Returns (month t+1) | | | Returns: t-6,t-1 |
| | Good | Bad | Good-Bad | Good-Bad |
| Average Return | 0.21 | 0.30 | -0.09 | -0.09 |
| Standard Deviation | 4.87 | 5.01 | 2.85 | 1.29 |
| CAPM alpha | -0.23 | -0.14 | -0.09 | -0.1 |
| | (1.07) | (0.56) | (0.33) | (1.09) |
| Three Factor alpha | -0.25 | -0.15 | -0.1 | -0.09 |
| | (1.17) | (0.64) | (0.34) | (0.95) |
| Four Factor alpha | -0.14 | -0.28 | 0.14 | -0.07 |
| | (0.66) | (1.16) | (0.49) | (0.81) |

| Panel C: Industry Returns Around Law Passage, Textual Analysis (Alternate Dictionary) Approach | | | | |
|---|---|---|---|---|
| Sorting Variable: long = passed and positive text, short = passed and negative text | | | | |
| | Future Returns (month t+1) | | | Returns: t-6,t-1 |
| | Good | Bad | Good-Bad | Good-Bad |
| Average Return | 0.45 | 0.52 | -0.07 | 0.02 |
| Standard Deviation | 4.91 | 5.06 | 3.25 | 1.55 |
| CAPM alpha | -0.12 | -0.04 | -0.08 | 0.02 |
| | (0.58) | (0.14) | (0.27) | (0.23) |
| Three Factor alpha | -0.15 | -0.2 | 0.05 | 0.07 |
| | (0.75) | (0.77) | (0.15) | (0.62) |
| Four Factor alpha | -0.04 | -0.22 | 0.18 | 0.07 |
| | (0.18) | (0.79) | (0.55) | (0.62) |

| Panel D: Bill Passage Day Return Signing | | | | | |
|---|---|---|---|---|---|
| Sorting Variable (daily returns): Long = $r_{t-1,t+1} > 0$, Short = $ret_{t-1,t+1} <= 0$ | | | | | |
| | Future Returns (month t+1) | | | Returns: t | Returns: t-6,t-1 |
| | Long | Short | Long-Short | Long-Short | Long-Short |
| Average Return | 0.34 | 0.63 | -0.29 | 1.75*** | 0.06 |
| Standard deviation | 4.50 | 4.48 | 2.99 | 3.50 | 1.24 |
| CAPM alpha | -0.34 | -0.06 | -0.29 | 1.79*** | 0.06 |
| | (-1.73) | (-0.28) | (-1.24) | (6.66) | (0.75) |
| Three Factor alpha | -0.37 | -0.14 | -0.22 | 1.75*** | 0.07 |
| | (-1.86) | (-0.76) | (-0.97) | (6.52) | (0.81) |
| Carhart alpha | -0.33 | -0.10 | -0.22 | 1.68*** | 0.07 |
| | (-1.63) | (-0.53) | (-0.95) | (5.98) | (0.76) |

| Panel E: Cumulative Market Adjusted Return (t-6,t-1) Signing | | | | | |
|---|---|---|---|---|---|
| Sorting Variable (monthly returns): Long = $r_{t-6,t-1} > 0$, Short = $r_{t-6,t-1} <= 0$ | | | | | |
| | Future Returns (month t+1) | | | Returns: t | Returns: t-6,t-1 |
| | Long | Short | Long-Short | Long-Short | Long-Short |
| Average Return | 0.57 | 0.42 | 0.15 | 0.38 | 2.48*** |
| Standard deviation | 4.70 | 5.14 | 4.81 | 4.22 | 3.12 |
| CAPM alpha | -0.06 | -0.25 | 0.20 | 0.42 | 2.53*** |
| | (-0.26) | (-1.14) | (0.53) | (1.34) | (12.50) |
| Three Factor alpha | -0.10 | -0.29 | 0.19 | 0.36 | 2.40*** |
| | (-0.44) | (-1.29) | (0.53) | (1.18) | (11.21) |
| Carhart alpha | -0.43** | 0.02 | -0.45 | -0.15 | 2.30*** |
| | (-2.11) | (0.10) | (-1.41) | (-0.53) | (11.21) |

## Table 5.
## Predicting Industry-Level Real Outcomes

This table reports Fama-MacBeth cross-sectional predictive regressions of future industry-level real outcomes on an economic interest signing measure and various industry-level characteristics, from 1989-2008. The economic interest signing approach is described in Table 2. The dependent variables in Panel A are future industry-level quarterly variable: a) the change in industry value-weighted average earnings per share estimates in the subsequent quarter (measured from month $t$ to month $t+3$, and drawn from I/B/E/S); and b) the change in industry value-weighted standardized unexpected earnings (measured from month $t$ to month $t+6$, and computed as in Bernard and Thomas (1989)). The dependent variables in Panel B are future industry-level annual variables: a) industry-level value-weighted average return on assets (net income divided by lagged assets, measured in year t+1, and drawn from CRSP/Compustat); and b) industry-level value-weighted average sales growth (measured from year $t$ to year $t+1$, and drawn from CRSP/Compustat). The variable of interest in these regressions is *Interested Vote*. To construct *Interested Vote* we "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. *Interested Vote* is the difference between the two (so positive when interested Senators on the given bill vote more positively than uninterested Senators, and negative when they vote more negatively). We include various controls on the right-hand side of these regressions for industry-level momentum (i.e., the industry return from months $t$-12 to $t$), and measures of industry-level average firm size, and book-to-market. $t$-statistics are shown below the estimates, and 1%, 5%, and 10% statistical significance are indicated with ***,**, and *, respectively.

| Panel A: Predicting Future Industry-Level Analyst Earnings Revisions and Earnings Surprises | | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | EPS_Chg | EPS_Chg | EPS_Chg | SUE_Chg | SUE_Chg | SUE_Chg |
| *Interested Vote* | 1.346** | 1.512** | 2.348** | 1.047* | 1.279** | 1.166** |
| | (2.14) | (1.97) | (2.14) | (1.75) | (2.02) | (2.09) |
| *Industry Avg. Size* | | 0.196*** | 0.188** | | -0.038 | -0.036 |
| | | (2.74) | (2.37) | | (1.50) | (1.54) |
| *Industry Avg. Book-to-Market* | | | 0.466** | | | 0.933 |
| | | | (2.29) | | | (1.06) |
| *12-Month Lagged Return*$_{t\text{-}12:t\text{-}1}$ | | | 0.334 | | | -0.600* |
| | | | (0.81) | | | (1.94) |
| Number of observations | 229 | 229 | 229 | 229 | 229 | 229 |

Panel B: Predicting Future Industry-Level Fundamentals

| | (1) ROA | (2) ROA | (3) ROA | (4) SalesGrowth | (5) SalesGrowth | (6) SalesGrowth |
|---|---|---|---|---|---|---|
| *Interested Vote* | 0.054** | 0.051** | 0.045** | 0.242** | 0.242** | 0.209* |
| | (2.54) | (2.29) | (1.97) | (2.08) | (2.05) | (1.70) |
| *Lagged ROA* | 0.780*** | 0.777*** | 0.762*** | | | |
| | (17.95) | (17.66) | (17.82) | | | |
| *Lagged Sales Growth* | | | | 0.353*** | 0.357*** | 0.338*** |
| | | | | (4.43) | (4.36) | (3.91) |
| *Industry Avg. Size* | | -0.001 | -0.001 | | -0.000 | -0.000 |
| | | (1.24) | (1.28) | | (0.14) | (0.13) |
| *Industry Avg. Book-to-Market* | | | -4.138 | | | 5.855 |
| | | | (1.33) | | | (0.80) |
| *12-Month Lagged Return*$_{t\text{-}12:t\text{-}1}$ | | | 0.006 | | | 0.074** |
| | | | (0.87) | | | (2.39) |
| Number of observations | 19 | 19 | 19 | 19 | 19 | 19 |

## Table 6.
## Concentrated Senator Interests

This table reports calendar-time portfolio tests as in Table 2. The Long-Short portfolio tests are computed exactly as in Table 2 except that the Economic Interest Signing measure described in Table 2 is refined here as follows. Rather than looking at all interested Senators, we focus here only on the voting behavior of Senator's whose largest industry (by market capitalization) represents an above-median (in Panel A) level of concentration in that state relative to all other states that have that industry during that time period. Concentration is measured as the share of a state's total market cap that is made up of the industry in question. Thus we "sign" each bill's expected impact on a given industry by comparing the votes of this *subset* of "interested" Senators on that bill to the votes of all other Senators on that bill. We then compute the revised Economic Interest Signing measure exactly as in Table 2. In Panel A, the concentration threshold we employ is above-median, and in Panel B the concentration threshold we employ is 80 percent. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). $t$-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| Economic Interest Signing for Senators with Concentrated Interests | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote $>$ 0, Short = Interested Vote $<$ 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| Panel A: Top 1 Market-Cap ($>$ 50% Concentrated) | | | |
| Average Return | 0.23 | -0.5 | 0.74** |
| | (0.50) | (1.01) | (1.97) |
| CAPM alpha | -0.22 | -0.5 | 0.74** |
| | (0.50) | (1.01) | (1.97) |
| Three Factor alpha | -0.21 | -0.88*** | 0.67* |
| | (0.76) | (2.94) | (1.84) |
| Four Factor alpha | -0.09 | -1.06*** | 0.97*** |
| | (0.31) | (3.43) | (2.63) |
| Panel B: Top 1 Market-Cap ($>$ 80% Concentrated) | | | |
| Average Return | 0.18 | -0.73 | 0.92** |
| | (0.35) | (1.28) | (2.13) |
| CAPM alpha | -0.11 | -1.03*** | 0.91** |
| | (0.38) | (2.96) | (2.12) |
| Three Factor alpha | -0.10 | -0.94*** | 0.84** |
| | (0.32) | (2.90) | (1.99) |
| Four Factor alpha | 0.24 | -0.81** | 1.05** |
| | (0.74) | (2.28) | (2.27) |

## Table 7.
## Industry Relevance and Home State Firms Only

This table reports calendar-time portfolio tests as in Table 2. In Panel A we exploit variation in our industry assignment procedure. Specifically, we focus solely on cases where the industry in question is the "most" affected of all industries in a given bill; in these cases we only use these industries to compute our industry-level value-weighted return. In Panel B we refine this measure even further by only including the returns of those firms in a given industry who happen to be also located in one of the "interested" Senators home states. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). *t*-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| Variation in Industry Relevance and Firms Affected | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote $>0$, Short = Interested Vote $<0$ | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| **Panel A: Only Industries Mentioned Most Prominently in Bill** | | | |
| Average Return | 0.41 | -0.6 | 1.01** |
| | (0.69) | (1.08) | (2.05) |
| CAPM alpha | -0.25 | -1.20*** | 0.95* |
| | (0.62) | (2.76) | (1.94) |
| Three Factor alpha | -0.26 | -1.19*** | 0.92* |
| | (0.76) | (3.08) | (1.94) |
| Four Factor alpha | -0.09 | -1.38*** | 1.30*** |
| | (0.24) | (3.55) | (2.78) |
| **Panel B: Only Industries Mentioned Most Prominently and Only Firms Located in Interested Senator s Home State** | | | |
| Average Return | 1.23 | -0.56 | 1.79** |
| | (1.40) | (0.58) | (1.96) |
| CAPM alpha | 0.19 | -1.78** | 1.97** |
| | (0.25) | (2.33) | (2.11) |
| Three Factor alpha | 0.29 | -1.71** | 2.01** |
| | (0.45) | (2.29) | (2.16) |
| Four Factor alpha | 0.44 | -1.40* | 1.84* |
| | (0.65) | (1.81) | (1.89) |

Table 8.
Bill Complexity

This table reports calendar-time portfolio tests as in Table 2. In this table we exploit variation in the complexity of bills in two ways. Specifically, in Panel A we employ a definition of complex bills, i.e. bills that have above-median word length (defined as bill word length divided by the number of affected industries). In Panel B we focus on non-complex bills, i.e., the complement to the set of complex bills in Panel A. In Panel C we focus solely a second measure of complex bills, i.e. bills that have been voted on more times than the median bill (the median number of votes on a bill is 2). In Panel D we focus again on non-complex bills, i.e., the complement to the set of complex bills in Panel C. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). *t*-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

Panel A: Complex Bills (High Word Length)

Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0

| | Future Returns (month t+1) | | |
|---|---|---|---|
| | Long | Short | Long-Short |
| Average Return | 0.41 | -0.39 | 0.80*** |
| | (0.91) | (-0.78) | (2.78) |
| CAPM alpha | -0.03 | -0.83*** | 0.80*** |
| | (-0.12) | (-2.96) | (2.79) |
| Three Factor alpha | -0.06 | -0.87*** | 0.80*** |
| | (-0.29) | (-3.12) | (2.77) |
| Four Factor alpha | 0.08 | -0.92*** | 1.00*** |
| | (0.38) | (-3.22) | (3.50) |

Panel B: Non-Complex Bills (Low Word Length)

Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0

| | Future Returns (month t+1) | | |
|---|---|---|---|
| | Long | Short | Long-Short |
| Average Return | 0.19 | 0.29 | -0.10 |
| | (0.37) | (0.53) | (-0.21) |
| CAPM alpha | -0.30 | -0.18 | -0.12 |
| | (-1.14) | (-0.46) | (-0.26) |
| Three Factor alpha | -0.29 | -0.29 | -0.00 |
| | (-1.13) | (-0.80) | (-0.00) |
| Four Factor alpha | -0.20 | -0.33 | 0.13 |
| | (-0.71) | (-0.83) | (0.28) |

| Panel C: Complex Bills (Above-Median Number of Votes) | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| Average Return | 0.28 | -0.57 | 0.85** |
| | (0.54) | (-1.07) | (2.19) |
| CAPM alpha | 0.18 | -0.68** | 0.85** |
| | (0.63) | (-2.17) | (2.19) |
| Three Factor alpha | 0.08 | -0.74** | 0.82** |
| | (0.30) | (-2.39) | (2.16) |
| Four Factor alpha | 0.28 | -0.62 | 0.90** |
| | (1.04) | (-1.96) | (2.28) |

| Panel D: Non-Complex Bills (Below-Median Number of Votes) | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| Average Return | 0.41 | 0.23 | 0.18 |
| | (0.90) | (0.46) | (0.48) |
| CAPM alpha | -0.27 | -0.41 | 0.14 |
| | (-1.28) | (-1.17) | (0.36) |
| Three Factor alpha | -0.30 | -0.51 | 0.21 |
| | (-1.49) | (-1.56) | (0.55) |
| Four Factor alpha | -0.21 | -0.60 | 0.39 |
| | (-1.01) | (-1.78) | (1.00) |

## Table 9.
## Robustness Tests: Economic Interest Thresholds

This table reports calendar-time portfolio tests as in Table 2. We broaden the Economic Interest Signing measure described in Table 2 as follows. Instead of using a Top 3 industry threshold to define whether a Senator is interested in a given bill, we employ a Top 5 and a Top 10 industry threshold (again where industries are ranked within each state by total aggregate firm sales). The Long-Short portfolio tests are computed exactly as in Table 2 once this change is made to the set of interested Senators. This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). $t$-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| Portfolio Returns for Broader Economic Interest Classifications | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote > 0, Short = Interested Vote < 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| | Top 5 Sales Industry | | |
| Average Return | 0.76** | 0.14 | 0.62** |
| | (2.08) | (0.37) | (2.27) |
| CAPM alpha | 0.16 | -0.44* | 0.60** |
| | (0.88) | (1.72) | (2.20) |
| Fama-French alpha | 0.09 | -0.47* | 0.56** |
| | (0.52) | (1.88) | (2.06) |
| Carhart alpha | 0.19 | -0.43* | 0.62** |
| | (1.08) | (1.65) | (2.20) |
| | Top 10 Sales Industry | | |
| Raw returns | 0.71** | 0.51 | 0.21 |
| | (1.99) | (1.43) | (0.80) |
| CAPM alpha | 0.08 | -0.09 | 0.17 |
| | (0.47) | (0.42) | (0.69) |
| Fama-French alpha | 0.00 | -0.17 | 0.17 |
| | (0.01) | (0.80) | (0.68) |
| Carhart alpha | -0.04 | -0.09 | 0.05 |
| | (0.26) | (0.41) | (0.18) |

## Table 10.
## Other Influences: Lobbying

This table reports calendar-time portfolio tests as in Table 2. In addition to our Economic Signing Measure, described in Table 2, we add data on lobbying expedenditures. The lobbying data we use (obtained from OpenSecrets.org) is available by industry and by year, since 1999. In Panel A we replicate our main result from Table 2 over the sample period for which lobbying data is available: 199901-200812. In Panel B we examine the subset of affected industries for which lobbying is most pronounced in a given year (above the $80^{th}$ percentile of industries in terms of lobbying dollar expenditures This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). *t*-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| The Impact of Lobbying on Economic Interest Signing | | | |
|---|---|---|---|
| Sorting Variable: Long = Interested Vote $>$ 0, Short = Interested Vote $<$ 0 | | | |
| | Future Returns (month t+1) | | |
| | Long | Short | Long-Short |
| **Panel A: Economic Interest Signing Using Lobbying Sample Period: 1991-2008** | | | |
| Average Return | 0.18 | -0.87 | 1.05** |
| | (0.37) | (1.45) | (2.10) |
| CAPM alpha | 0.06 | -1.00** | 1.06** |
| | (0.23) | (2.11) | (2.13) |
| Three Factor alpha | -0.05 | -0.95** | 0.90* |
| | (0.17) | (2.24) | (1.94) |
| Four Factor alpha | 0.08 | -0.90** | 0.98** |
| | (0.32) | (2.11) | (2.11) |
| **Panel B: Economic Interest Signing for High Lobbying Industries Only** | | | |
| Average Return | -0.46 | -1.11* | 0.65 |
| | (0.77) | (1.65) | (1.46) |
| CAPM alpha | -0.45 | -1.11** | 0.65 |
| | (1.27) | (2.33) | (1.45) |
| Three Factor alpha | -0.44 | -0.89** | 0.44 |
| | (1.27) | (2.32) | (1.04) |
| Four Factor alpha | 0.04 | -0.54 | 0.58 |
| | (0.12) | (1.36) | (1.27) |

# Appendix:
# Supplementary Tables for
# “Legislating Stock Prices”

In this Appendix we describe in more detail the method and data cut-offs we use to: i.) classify bills into industries (as in Cohen and Malloy (2011)), and ii.) assign bills as positive or negative for the given industries to which it relates.

### A.1 Industry Classification, Keywords, and Cut-offs

As described in the data section, we first download the full text of all bills jointly from the Government Printing Office (GPO) and Congress's Thomas database. We then parse each bill's entire text, and use a list of matching words to classify each bill into the industries to which it applies. Table A1 displays the words we use to classify into the Fama-French 49 industries, for three sample industries. We are happy to provide the entire list upon request, for all 49 industries (but including them all in the appendix table made this a 13 page table). Again, the Fama-French 49 industries are somewhat analogous to the SIC 2 digit industry classification, with some improvements and aggregations of similar SIC 2 sub-industry components. As Table A1 shows, we obviously attempt to use a number of keywords to capture the bill's relevance to a given industry. However, we balance this by not choosing too many keywords to induce false positives. In the table, we include when a given industry (or keyword) was removed because it was capturing too many false positives in the industry assignment process.

To give a few examples, we remove the word "soda" from the "Candy and Soda" industry, as it kept matching with "soda ash" and "soda mountain" from a number of bills, both having nothing to do with the desired industry. As another example, for the "Personal Services Industry," we initially included the keyword "beauty shop." Unfortunately, nearly all of the instances of this keyword in bills refer to the "House Beauty Shop," referencing a (debate about) and the eventual closing of this service in one of the House of Representative buildings, and so we remove this keyword as well.

Another important aspect of this table is that after deciding upon keyword roots, we then go through each extension and conjugation that we see in the bills in order to determine which extensions and conjugations reasonably refer to the given industry. So, for instance, for the "Utilities" industry, we use the keyword root "utilit-." While this matches correctly "utility" and "utilities," it incorrectly picks up "utilize" and "utilitarian," which also appear in bills. We thus remove all of the final two matches from the bill matched sample to Utilities through "utilit-." We do this for every keyword root in every industry to ensure that the given keyword root matches to the intended industry.

The last element of the process is then choosing threshold frequencies for each keyword appearing in a given bill relative to that keyword's use across all bills, in order to classify a given bill as referring to that keyword's industry. We use two potential methods for this, the first is the absolute count of the keyword, and the second is the ratio of that word to the entire number of words in the bill. For instance, the word "electricity" has a frequency cut-off of 11 times, representing the 95$^{th}$ percentile of that keyword's distribution amongst bills. We have used cut-offs for both measures ranging from the 75$^{th}$-95$^{th}$ percentile, and the results in the paper are unaffected. All results reported in the paper are for the middle of this range, 85$^{th}$ percentile, using the absolute number of keyword appearances.

The outcome of this process is a match of relevant industries to each bill considered in congress. We believe we have a quite conservative match process, but match fairly definitively 20% of all bills to a relevant industry (or industries).

### A.2 Bill Signing Procedure

In order to "sign" each bill as either positive or negative for the assigned industries, we examine the voting record of the Senators who have an interest in each of our assigned industries. We establish this by summing up the constituent firms located in each Senator's state (we have used sales, market equity, number of employees, and number of firms, and they are highly correlated and yield nearly identical results in terms of magnitude and significance). Then, for each state, we rank all industries that reside in that state and define "important" industries for that state as those that rank in the top 3 for that year. We assign these for each state in each congress, so again displaying the entire table would be quite large. However, in Table A2 we include a subset of state-industry and congress classifications (again, we are happy to provide the entire table upon request, but including them all made this table over 17 pages). To give an example from the Table A2, in the state of New York during the 110$^{th}$ Congress (2007-2008), the most important industries in the state were Banks, Insurance, and Sales & Trading.

Once the important industries for each state are established, we then map these to the voting records of the Senators in each state. We then classify each bill that mentions the given industry as positive or negative for the mentioned industry using the interested Senators' votes. For instance, consider bill S.3044 form the 110th Congress shown in Figures A1 and A2. Figure A1 indicates that this particular bill that was assigned only to the Fama-French industry #30: Petroleum and Natural Gas, based on the relative frequency of pre-specified keywords in the bill that pertain to this industry. Figure A1 displays the summary text at the top of the bill, which indicates that the bill clearly pertains to the oil and gas industry. Figure 1 then displays the executable program we created to implement our signing procedure for the same bill depicted in Figure A1. The summary text indicates that the goal of this bill was "to provide energy price relief and hold oil companies and other entities accountable for their actions with regard to high energy prices, and for other purposes," so the bill was likely to be perceived as negative for the oil and gas industry. The Petroleum and Natural Gas Industry qualified as an important industry in 8 states (including TX and LA), so the total number of "interested" votes in the bill was 16. Not surprisingly, even though this vote lined up largely along party lines, none of the 6 Republican Senators who voted in favor of the bill were Senators who were "tied" to this industry via constituent interests in their home state (all 8 interested Republicans voted against), and 1 of the 2 Democrats who voted against the bill was Mary Landrieu of Louisiana, a state heavily represented by oil and gas interests (the other Democrat who voted against was Henry Reid from Nevada, a consistent supporter of oil and gas companies); the 6 interested Democrats who voted in favor of the bill did so largely on party and ideological grounds (variables that we control for in our tests).

Specifically, we "sign" each bill's expected impact on a given industry by comparing the votes of "interested" Senators on that bill to the votes of "uninterested" Senators on that bill. Again, interested Senators on a given bill are those where an industry affected by the bill is a "Top 3" industry in that Senator's home state (where industries are ranked within each state by total aggregate firm sales, or total market capitalization). We then compute an Economic Interest Signing measure as follows: we compute the ratio of positive votes of all interested Senators by dividing their total number of yes votes on a bill by their total number of votes, and compare this to the ratio of positive votes of all uninterested

Senators; if the ratio of positive votes by interested Senators is greater than that for uninterested Senators, we call this a “positive” bill for the industry in question, and if the ratio of positive votes for interested Senators is less than that for uninterested Senators, we call this a “negative” bill for the industry. Our results are very similar regardless of whether we use this ratio difference (“R-R” in Figure 1) measure, or alternative signing measures such as the absolute ratio ("Ratio" in Figure 1, i.e., the percentage of interested Senators who vote for the bill), or the relative ratio ("R/R" in Figure 1, i.e., the percentage of interested Senators who vote for the bill divided by the percentage of all Senators who vote for the bill). and the ratio difference ("R-R" in Figure 1, i.e., the percentage of interested Senators who vote for the bill minus the percentage of all Senators who vote for the bill); our results are not sensitive to the particular signing measure we employ. We have also tried *within-party* signing measures that are computed identically to those above, except aggregated within each party (since many votes are along party lines) and again the results are very similar.

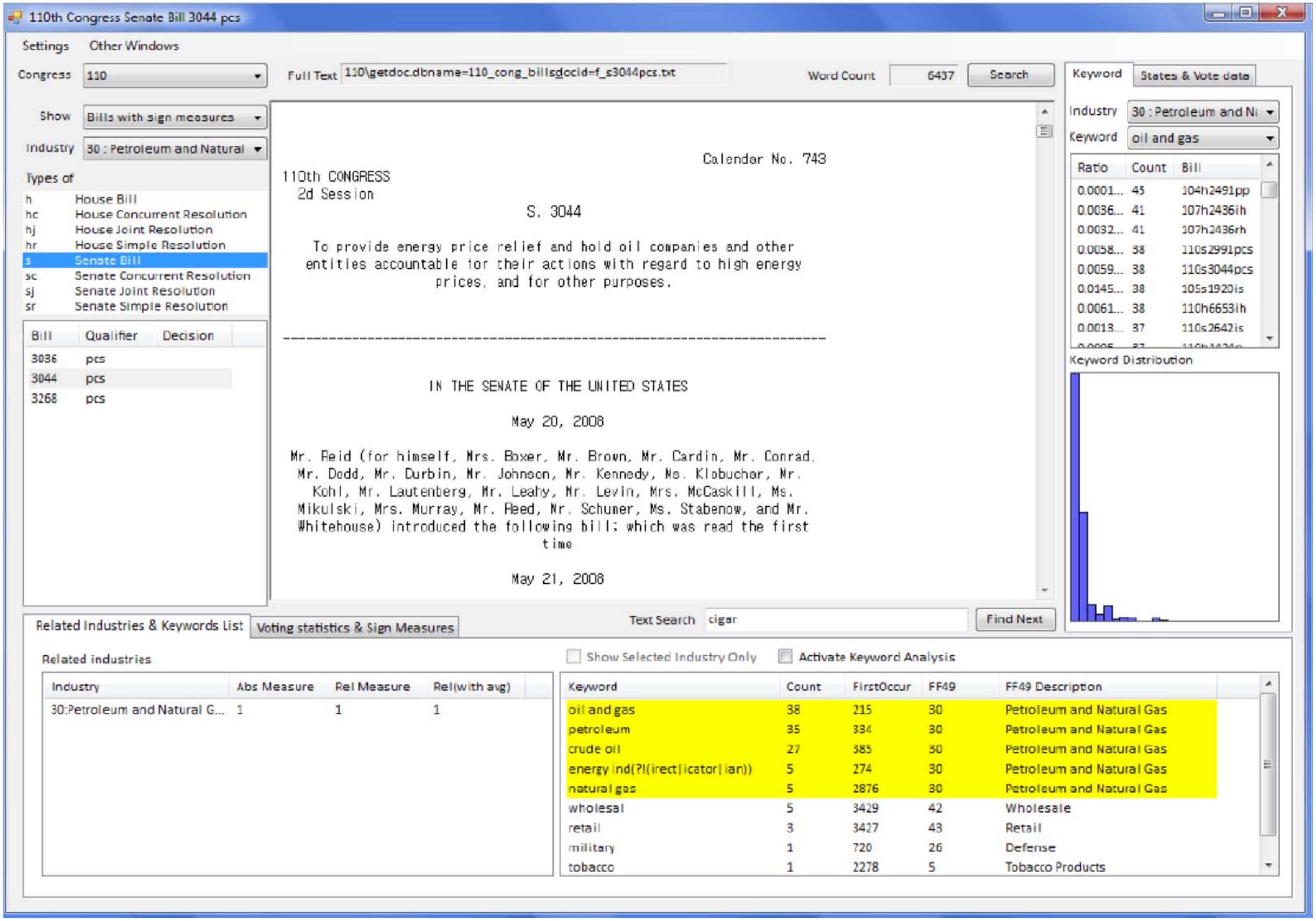


Figure A1.
Congressional Bill Industry Assignment Example

## Table A1.
## Industry Assignment Keywords and Cut-offs

This table shows the keywords used in assigning the full text of each bill in our sample to the resultant industries covered by the bill, along with the cut-offs for the percentile in the distribution of that keyword for the entire sample. We assign the given industry to a bill if any one of its keywords is above the 85th percentile cut-off given in the table. We choose a subset of the 49 industries (Fama-French Industry Classification) that we use, as the table would otherwise be prohibitively long. We are happy to provide the entire table of keywords and cut-offs upon request.

| Fama-French Industry # / Industry Name | Keyword | Count Greater Than / Equal To | Count Percentile |
|---|---|---|---|
| | agricultur- | 12 | 85 |
| | animal feed | 7 | 85 |
| | corn | 4 | 85 |
| 1 – Agriculture | crop(s) | 14 | 85 |
| | farm(s)(land) | 11 | 85 |
| | fishing | 8 | 85 |
| | livestock | 7 | 85 |
| | wheat | 8 | 85 |
| | air force | 31 | 85 |
| | Ammunition | 15 | 85 |
| | armed force(s) | 10 | 85 |
| | army | 13 | 85 |
| | gun(s)(runners)(powder) | 8 | 85 |
| 26 – Defense | marine corps | 30 | 85 |
| | military | 11 | 85 |
| | missile(s) | 23 | 85 |
| | national guard | 30 | 85 |
| | navy | 19 | 85 |
| | ordnance | 7 | 85 |
| | space vehicle(s) | 3 | 85 |
| | tanks | 9 | 85 |
| | weapon(s) | 15 | 85 |
| | broker dealer(s) | 3 | 85 |
| | closed end | 2 | 85 |
| | commodity broker(s) | 14 | 85 |
| | financial services firm(s) | 2 | 85 |
| | investment bank(s) | 8 | 85 |
| | investment firm(s) | 2 | 85 |
| 48 – Trading | investment management | 6 | 85 |
| | investment trust(s) | 12 | 85 |
| | mutual fund(s) | 3 | 85 |
| | reit(s) | 44 | 85 |
| | broker-dealer(s) | No Keyword Count Information Available | |
| | closed-end | No Keyword Count Information Available | |
| | security broker(s) | Keyword removed : Only 2 bills with the keyword, and all appear in definition clauses | |
| | unit trust(s) | No Keyword Count Information Available | |

## Table A2.
## Industry Assignments by State

This table shows the 3 most important industries for each state at the beginning, midpoint, and endpoint of our sample. "Importance" is measured by summing up the market equity of all publicly traded firms in each industry residing in a state, and then ranking industries. We thus show below the three largest industries operating in each given state over each Congress. We choose a subset of states and Congresses, as the table would otherwise be prohibitively long. We are happy to provide the entire table of states, industries operating in those states, and most important industries for each state and Congress upon request.

| State | Fama-French Industry # | Industry Name | Congress |
|---|---|---|---|
| TX | 30 | Oil | 101 |
| TX | 31 | Utilities | 101 |
| TX | 32 | Telecom | 101 |
| TX | 30 | Oil | 105 |
| TX | 32 | Telecom | 105 |
| TX | 35 | Computers | 105 |
| TX | 30 | Oil | 110 |
| TX | 31 | Utilities | 110 |
| TX | 32 | Telecom | 110 |
| | | | |
| NY | 45 | Banks | 101 |
| NY | 46 | Insurance | 101 |
| NY | 48 | Trading | 101 |
| NY | 45 | Banks | 105 |
| NY | 46 | Insurance | 105 |
| NY | 48 | Trading | 105 |
| NY | 45 | Banks | 110 |
| NY | 46 | Insurance | 110 |
| NY | 48 | Trading | 110 |
| | | | |
| CA | 32 | Telecom | 101 |
| CA | 35 | Computers | 101 |
| CA | 43 | Retail | 101 |
| CA | 35 | Computers | 105 |
| CA | 36 | Software | 105 |
| CA | 37 | Electronic Equipment | 105 |
| CA | 35 | Computers | 110 |
| CA | 36 | Software | 110 |
| CA | 37 | Electronic Equipment | 110 |

## Table A3.
## Other Influences: Personal Portfolios

This table reports calendar-time portfolio tests as in Table 2. The Long-Short portfolio tests are computed exactly as in Table 2 except that the Economic Interest Signing measure described in Table 2 is refined here as follows. Rather than looking only at the votes of all interested Senators, we focus here on the subset of votes cast by Senators that *also* have a personal stockholding in the affected industry. We obtain this data on personal stockholdings from OpenSecrets.org, for the period 1997-2008. In Panel A we first replicate our main result from Table 2 over this exact sample period. Then in Panel B we redefine our signing measure using only the votes of this subset of Senators who *also* have a personal stockholding in the affected industry.
This table reports the average monthly "Long-Short" portfolio return for a portfolio that goes buys the "Long" portfolio and sells the "Short" portfolio each month. The "CAPM alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index (see Fama and French (1996). The "Fama-French alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, and the return on the value (HML) factor (see Fama and French (1996)). The "Carhart alpha" is a risk-adjusted return equal to the intercept from a time-series regression of the Long-Short portfolio on the excess return on the value-weight market index, the return on the size (SMB) factor, the return on the value (HML) factor, and the return on a prior-year return momentum (MOM) factor (see Carhart (1997)). $t$-statistics are shown in parentheses, and 1%, and 5% statistical significance are indicated with **, and *, respectively.

| Panel A: Using Personal Stockholdings In Addition to State-Level Industry Presence to Determine Interested Senators | | | |
|---|---|---|---|
| | Long Month $t$+1 Portfolio Return | Short Month $t$+1 Portfolio Return | (Long-Short) Month $t$+1 Portfolio Return |
| Interest-Based Signing Approach over Personal Stockholdings Data Sample Period (199701-200812) | | | |
| Raw returns | 0.27 | -0.69 | 0.96** |
| | (0.54) | (1.20) | (2.16) |
| CAPM alpha | 0.05 | -0.91** | 0.96** |
| | (0.21) | (2.14) | (2.17) |
| Fama-French alpha | -0.02 | -0.97** | 0.95** |
| | (0.10) | (2.53) | (2.25) |
| Carhart alpha | 0.10 | -0.90** | 1.00** |
| | (0.43) | (2.32) | (2.35) |
| Panel B: Using Interest-Based Signing Approach for Senators Who Also Have Personal Stockholdings in Target Industry | | | |
| Raw returns | -0.05 | -0.96* | 0.91* |
| | (0.09) | (1.71) | (1.76) |
| CAPM alpha | -0.18 | -1.11*** | 0.93* |
| | (0.59) | (3.01) | (1.80) |
| Fama-French alpha | -0.13 | -1.02*** | 0.89* |
| | (0.41) | (2.87) | (1.70) |
| Carhart alpha | 0.38 | -1.19*** | 1.58*** |
| | (1.41) | (3.25) | (3.26) |